RADIOWORLD

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Bray Seeks Fresh IT Approach at FCC

CIO has managed transition from the commission's 207 legacy IT systems

▶NEWSMAKER

BY TOM VERNON

It is an IT turnaround story. In late 2013 David Bray joins the FCC as its chief information officer. He inherits a creaky IT infrastructure with 207 legacy systems and maintenance costs eating up 85 percent of his budget. He finds a staff that had been led by nine permanent or acting CIOs over the previous eight years, its team members relatively unenthusiastic about the prospects of modernization or moving to cloud services.

Nevertheless a bold plan is developed to move as much of it as possible into the cloud. It's a bumpy ride at times, one that culminates in a 55-hour marathon over Labor Day weekend 2015.

The hard work paid off and was recognized when the FCC IT team won the 2015 AFFIRM Cloud Computing Leadership award. The commission says its new cloud-based IT achieves results "in half the time at one-sixth the cost."

RW talked to Bray about the technical aspects of the turnaround as well as a pivot in staff attitudes that made it possible. This is a story not just about software and servers but also about rallying the "troops," creating posters on IT, signing coffee mugs in recognition of thanks and decorating a "Thank-o-saurus Rex" dinosaur.

The FCC IT team involved with part of "Operation Server Lift" poses at the commercial service provider that assumed operation of the commission's systems at its remote facility.

Radio Tech Maps Its Route to the Top

NAB Show Broadcast Engineering Conference explores extreme broadcasting, metadata management, digital MPX AES192, new kinds of FM interference and more.

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Climbers explore Red Rock Canyon National Conservation Area near Las Vegas. Photo by Mary Ellen Dawley.

World Radio History

The crowd for the first-day keynote address overflowed its room at the Library of Congress.

Photo by Jennifer Waits

▶PRESERVATION

When Radio Believers Met on the Hill

Scholars, archivists strategize at first
Radio Preservation Task Force Conference

BY JENNIFER WAITS

Radio World continues our coverage of activities of the Radio Preservation Task Force. Last issue, Josh Shepperd and Christopher H. Sterling wrote broadly about its recent work to date. Here's a report about its first conference from Jennifer Waits, a Radio World contributor who is co-chair of the task force's College, Community and Educational Radio Caucus.

Radio scholars, archivists and practitioners congregated in the Washington area for the first Radio Preservation Task Force conference. Stemming from the Library of Congress National Recording Preservation Plan, the Task Force was created in 2014.

The conference, "Saving America's Radio Heritage: Radio Preservation, Access and Education," had a day of sessions and keynotes at the Library of Congress, followed by a second full day at University of Maryland. Drawing around 300 attendees from 100 academic and cultural institutions, the event was a unique opportunity for radio history enthusiasts to convene and strategize about how to ensure that radio's rich legacy is preserved.

Keynotes, panels, workshops and caucuses worked to not only reveal hidden radio histories, but also to bring together interested parties for future collaborations and preservation efforts.

SINCERITY EFFECT

Day One began with a keynote by Paddy Scannell from University of Michigan. He opined that everyone in the room had the love of radio in common and he argued that the passion we share for radio is related to what he calls radio's "sincerity effect." Listeners have the impression that people on the radio are speaking directly to them in a one-to-one conversation, in contrast to public speakers who are perceived as speaking to a crowd. He explained the importance of radio's "live" qualities, adding that there's an impermanence to radio that adds to its appeal.

Following the keynote, attendees chose among concurrent sessions in the morning and afternoon. Among the choices were presentations about a world-famous radio preacher, NPR history, African-American radio in Chicago, early LGBT programs and efforts to save college radio history, to name a few.

The day concluded with a keynote by Sam Brylawski, co-author of the Library of Congress National Recording Preservation Board study on audio preservation, who is now at University of California, Santa Barbara. His talk, "Unchain Broadcasting Before It's Lost Forever: Collaboration for Preservation," was a fitting recap of the day.

He spoke of the challenges of preserving recorded sound, explaining that some of the prior methods like copying to tape resulted in inferior copies than at times deteriorated "faster than the original." Today, with digitization, there's an opportunity to make copies that are easier to share; but he acknowledged that big digitization projects require the proper infrastructure.

Brylawski pointed out that radio is in dire need of preservation, stating that, "we saw it was slipping through the cracks" and "that there was no national plan." He argued that often there are limited copies of radio productions and guessed that much material was dumped when radio stations were sold or consolidated, particularly after the 1996 Telecommunications Act. Citing collectors and dumpster-diving "retired engineers" as heroic figures, he argued that a lot of preservation "has been done by collectors."

Brylawski seemed optimistic about the state of radio, saying that radio is "maybe bigger than ever in our history." What he would like to see change, however, is access to radio archives.

He said that the Task Force is working to catalog radio collections, but said one challenge is that copyright can impede preservation and scholarship when legal agreements prohibit duplication. He stated that it was his fantasy that there could be a Creative Commons License or a "sound scholarship" program in order to help "free up" archives and make them available to more people.

DEFINE THE TASK

Day Two of the conference, held at the University of Maryland's Hornbake Library not far up the road from the capital, was focused on strategizing to preserve specific archives.

In an opening plenary, Brylawski characterized the day by asking, "What is the work that has to be done?" before leading into a panel discussion with representatives from four major archives: American Archive of Public Broadcasting, Pacifica Radio Archives, WNYC/WQXR/New York Public Radio and NPR.

FCC Seeks to Raise Profile on Pirates

Commission hopes education will help in this ongoing game of Whac-a-Mole

FROM THE
EDITOR
Paul McLane

Sending letters to mayors, ad agencies, police chiefs and landlords to raise awareness about pirate radio can't hurt, though I have to wonder how much practical help it'll be.

The FCC this month released an enforcement advisory and associated education campaign, as we reported at *radioworld.com*. Commissioner Michael O'Rielly has made pirate radio a personal cause and was enthusiastic. He called it a turning point.

"It is my hope that a thoughtful education and outreach campaign can convince those who may be unknowingly facilitating pirates to join us as partners in addressing the challenge," he stated, repeating a theme he has sounded in public appearances.

"Together with renewed and refocused enforcement activity in the field, our ongoing effort to raise awareness will make a real difference in the fight to protect broadcasters and the communities they serve."

A sticking point, of course, will be that part about "renewed and refocused enforcement activity in the field." Absent in the FCC announcement was

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DA 16-159
March 1, 2016
Enforcement Advisory No. 2016-02

FCC ENFORCEMENT ADVISORY

WARNING: Unauthorized Radio Broadcasting is Illegal

**Persons or Businesses Operating "Pirate" Broadcast Stations
Are in Violation of Federal Law and Subject to Enforcement Action**

Federal law prohibits operating radio broadcasting equipment in most cases without an FCC license. Thus, perpetrators of pirate radio stations, which by definition do not obtain FCC licenses or comply with Commission rules and requirements, are in violation of Federal law and FCC rules. This prohibition does not discriminate by size of operations, applying equally to the rebellious high school kid operating a radio station from his bedroom as it does to slick and sophisticated high-powered illegal broadcast operations.

What is Prohibited? Section 301 of the Communications Act prohibits the "use or operat[ion of] any apparatus for the transmission of energy or communications or signals by radio" without a license issued by

discussion of more agents knocking on doors or turning on signal-tracking gear in response to complaints from licensed broadcasters.

That's the kind of action broadcasters tell me they want, the kind of action pre-

sumably hampered by recent reductions in the commission's field presence.

The New York State Broadcasters Association responded to the advisory with a statement of "delight" but went on to state, "We hope the advisory will
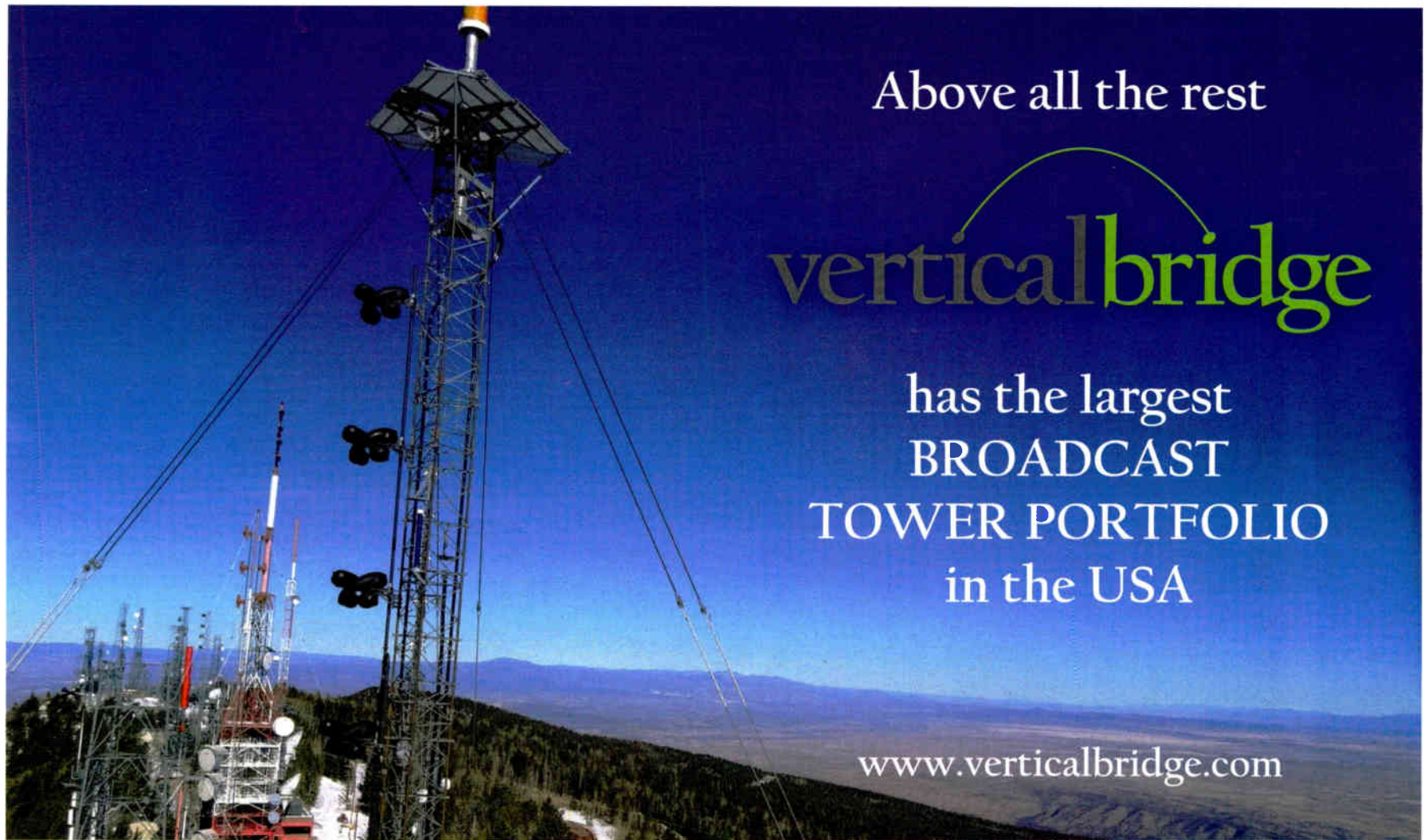
be accompanied by a commitment from the FCC to devote more Enforcement Bureau resources to combat this ever-increasing problem." Whether that's in the offing seems doubtful.

Don't dismiss the education effort out of hand though. Anyone who reads commission pirate enforcement reports knows that often, the people indirectly involved — landlords, local merchants, advertisers — don't care or know that such broadcasts are illegal and could even get them into trouble of their own.

The advisory informs them that the prohibition against pirate radio "does not discriminate by size of operations, applying equally to the rebellious high school kid operating a radio station from his bedroom as it does to slick and sophisticated high-powered illegal broadcast operations." Such activity, the FCC wrote, "threatens the livelihood and sustainability of existing radio broadcasters and the health and safety of the listening public."

The commission wrote in its letters,

PRESERVATION

While each archive is working to preserve radio, panelists acknowledged challenges. Since public radio archives are often housed at individual stations, the American Archive of Public Broadcasting is working to provide a "portal of discovery" in order to help "solve the separate silos syndrome," said Alan Gevinson, project director at the Library of Congress.

The day continued with workshops and caucuses, with participants taking a closer look at specific topic areas, including digital archives, local archives, gender/feminist/LGBT radio, bilingual radio and more. Caucuses are charged with coming up with strategies for finding and preserving radio collections in some of these topic areas.

The final plenary, "The Job Still to Be Done," included discussion about challenges and opportunities for the task force.

The Library of Congress' Gene DeAnna said there are many hidden collections and that it's tough to figure out how to centralize materials. DeAnna and others emphasized a need for archives and institutions to work together.

The National Museum of American History's Robert Horton said that there is an "incredible premium now on collaboration," emphasizing that "we have to share resources." Touching on the difficulty in acquiring funds for preservation projects, he said demonstrating "impact" often is what drives funding decisions. Additionally, he said, many funders are interested in the number of potential users. The Smithsonian Center

College radio participants and enthusiasts chat during the closing reception at University of Maryland. From left, Tyler Maxin of WNYU(FM), Elizabeth Hansen of College Radio Archive, Jerome Glick of WITR(FM) and Sarah Settineri of WHCS Hunter College Radio.

for Folklife and Cultural Heritage is already focused on "users" and its main goal is to ensure that its materials are made available to many people, according to curator and senior archivist Jeff Place. In part, that's why the Smithsonian regularly releases books and CDs related to its collections.

Several people participating in the event remarked to Radio World observers that they wished commercial radio organizations had taken a higher profile here.

But as the conference concluded and busses traveled back to Washington from College Park, enthusiasm was palpable. Attendees talked about how special the event was and spoke optimistically about future conferences, although

none have been booked.

Josh Shepperd, the national research director of the Radio Preservation Task Force, said the event had exceeded his expectations. "When C-Span starting taping the first keynote on day 1, while NPR and CBS were airing pieces, with a big overflow crowd at the Library of Congress, I really got the feeling like this project — and its spirit of collaboration and goals of combining traditional methods with digital innovation — is arriving at the right moment."

The author is co-founder of Radio Survivor and a music DJ at Foothill College station KFJC(FM). She's passionate about the history of college radio, with which she's been involved since 1986.

Texas: Bulwark Against a Performance Tax

As long as stations continue serving communities, lawmakers will continue to respond favorably

▶COMMENTARY

BY OSCAR RODRIGUEZ

The author is president of the Texas Association of Broadcasters. TAB perspectives are featured regularly at radioworld.com as part of our widening offering of industry expert commentaries.

In our latest advocacy effort in Washington, the Texas Association of Broadcasters clinched our 23rd co-sponsor of a congressional resolution opposing the record label industry's effort to force yet another royalty on local radio stations, this one for each song aired.

Already sporting the greatest number of co-sponsors of any state congressional delegation, the new co-sponsor further cements Texas' standing as a bulwark against a "Performance Tax." Such a measure would come on top of the hundreds of millions of dollars the industry collectively pays already to performance rights organizations, as well as the millions of dollars that Texas stations alone pay artists performing in their live concerts.

Both House co-authors of the Local Radio Freedom Act hail from Texas, Rep. Mike Conaway, R-Midland, and Rep. Gene Green, D-Houston. Their districts couldn't be more different topographically, but the alliance and breadth of support from their colleagues reflects Texans' strong connection with their local radio stations.

DIRECT PARTNERSHIPS

Radio broadcasters' direct partnership with local businesses and their engagement in advancing community initiatives are the foundation of TAB's successful efforts to advocate for or against public policy measures affecting the industry.

In the past few sessions of the Texas legislature, TAB has secured a state sales tax exemption for radio stations' digital transmission equipment, a key protection in the state's bootlegging laws involving pre-1972 sound recordings and myriad laws protecting radio newsrooms, including a shield law, uniform reporting and corrections standards and an anti-SLAPP law.

These victories expand on past successes ranging from the defeat of an ad tax several times over, to the adoption of a wide range of state sales and franchise tax exemptions that provide a level and vibrant economic playing field for broadcasters within the media marketplace.

In each case, policymakers' understanding of the role that broadcasters play in advancing local communities was key to their responsiveness, and while regulators aren't historically moved by such logic and relationships TAB has scored significant advances in that realm, as well.

TAB quickly responded to FCC Commissioner Ajit Pai's call at the 2012 NAB Radio Show in Dallas for revitalizing the AM band and mustered significant congressional support when commission action stalled, helping push the measure past the finish line. Years before, the association sparked the successful fight in the 1990s against the FCC's adoption and retroactive application of EEO rules that resulted in tens of thousands of dollars in fines for about 18 Texas radio stations.

We're putting everything we've learned from these battles into our efforts with other industry groups to defeat one of the greatest threats to our overall economy, a reduction in the federal tax deductibility of advertising costs. TAB is methodically educating lawmakers about the importance of advertising to the economy and how reducing the deductibility would hurt local businesses and stifle job and business creation.

Our success in such efforts continues to depend on the personal engagement by local radio broadcasters in our advocacy. This focus gives rise to TAB's lobbying mantra that while TAB can help lawmakers understand an issue, only constituents can make them care. As long as radio stations continue serving their communities well and individual leaders engage in our advocacy efforts, lawmakers will continue to respond favorably and help keep radio strong.

▶NEWSROUNDUP

AUTO: Four GM brands — Buick, Cadillac, Chevrolet and GMC — have begun offering a free Android Audio update to vehicles that previously only supported Apple CarPlay. The update is available through dealerships. Android Audio is built around an audio and messaging app ecosystem that allows users to plug in a phone and access phone book, calendar, messages, Google Maps and audio content. It provides audio options including music downloaded to the phone, Internet radio apps, podcasts and apps like iHeartRadio that connect to AM/FM stations. GM believes it has the broadest deployment of Android Auto-capable vehicles, with more than 30 U.S. models and 40 global models. "We feel that this represents the first stage of truly updatable vehicles," a spokeswoman said. An Android Auto app and compatible third-party apps must be downloaded to a phone to use AA.

© General Motors

World Radio History

BRAY

AS A SERVICE

Bray says he knew that updating the 207 IT systems one by one was not an option. It was time to think differently and at the same time bring the infrastructure into the 21st century.

"Cloud computing and 'as a service' technology seemed to be the way to go. Freeing data from legacy IT systems and moving toward thin user interfaces with reusable code made sense," said Bray. "That way we don't have to do the same things 207 different times. Rather, we can reuse that code as part of a service catalog, and be more efficient and effective in what we are doing."

At the same time, Bray assessed the mindset of the commission's IT staff. "Three months in, I assembled the entire team to candidly discuss how they were feeling about the challenges and changes facing them. I adopted the role of listener and paid attention to the different views, concerns and
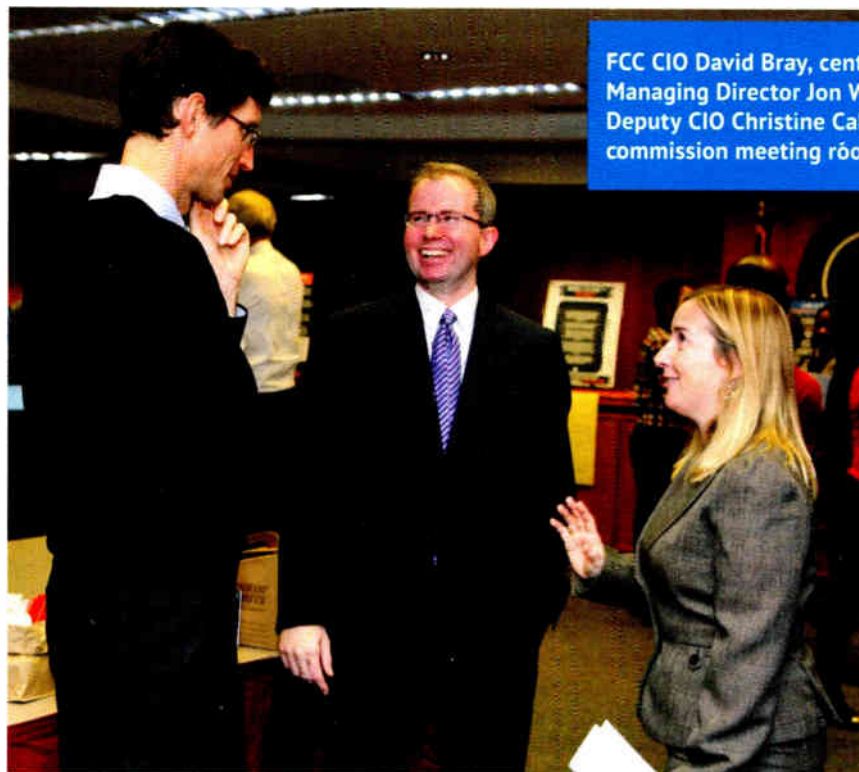
FCC CIO David Bray, center, talks with Managing Director Jon Wilkins and Deputy CIO Christine Calvosa in the commission meeting room.

The IT team made a complete copy of the FCC's storage area network. The plan called for the two versions to travel in two separate trucks taking two different routes.

perspectives. Only about 15 percent were excited. Another 45 percent were cautiously optimistic. The remainder wanted to return to the status quo or the way things were 15 years earlier."

Bray felt that success hinged as much on transforming the culture as the technology.

For any leader, prioritizing resources is only part of the challenge. The human factor too is critical. "Transforming an organization's culture involves explaining the vision, engaging team members and the public, incorporating their feedback and giving them a license to be creative co-laborers when it comes to problem solving," Bray said.

"A lot of history preceded my arrival. I knew it would be important to listen and learn, while also encouraging a 'think different' mindset about the agency's technology. I focused on letting everyone know I was open to thinking outside the box, and encouraged them to do the same. I reward creative problem solvers who get stuff done to move the mission forward."

An example of input from creative change agents cited by Bray is staffer Dusty Laun. He made a pitch for developing a Software-as-a-Service solu-

tion for getting something done in six months rather than one to two years.

"Dusty brought data that demonstrated with labor costs and the SaaS solution annual license, it would cost around $450,000 to do the venture, rather than $3.2 million — an 85 percent reduction in cost. The cost to maintain the system would be cheaper too: only $100,000 per year versus an estimated $640,000 to maintain a system on premise."

For the first four months of 2014, Bray and his team implemented a Virtual Desktop for all 1,750 FCC employees. "That eliminated user's desktops," said Bray, "which meant we could direct resources previously spent maintaining each PC towards implementing more cloud-based solutions."

The second move was replacing the commission's 15-year-old Consumer Help Desk. By utilizing Software-as-a-Service, the move was complete in six months at a fraction of the cost estimated by private sector contractors.

By April 2015, he said, the percentage of IT staff enthusiastic for the modernization effort had grown to 85 percent. "One team member … said it was like Thanksgiving because everyone is hopeful, you have your family

gathered together, and they may still be a dysfunctional family, however everyone is hopeful, on their best behavior, and glad to be together for the event. That's when I realized we had turned a corner together."

POWER-DOWN

With these successes, Bray said, he built momentum in the commission for the idea that moving legacy systems to newer cloud platforms could be done for significantly less money than creating new systems on-premise. It could also be done in a lot less time.

The first step to total cloud migration was moving the commission's e-mail and documents. In this way, they

wouldn't be disrupted by what was to come. This was necessary because the commission didn't have the funds to replicate and mirror all of its servers at the commercial server provider. Instead, the only option was to power down the servers, retire those too old to keep, do a physical move of remaining services to the server farm, and power back up. Soon the big move had a name: Operation Server Lift.

Migrating e-mail to the cloud was estimated to take about five months but the team did it in two. Helping move things along was the possibility of a government shutdown in October. Once e-mail and documents were in the cloud, planning for the physical migration could begin in earnest.

An RFP was issued in early 2015 for the movement of the FCC's servers, including datacenter consolidation and optimization. A contract was awarded shortly thereafter. In the meantime, a beta version of a "stakeholder-driven" refresh of website FCC.gov was unveiled. It had been six months in the making. Much of that time was spent talking to users to make sure the FCC got it right, he said.

Operation Server Lift was beginning to look more and more possible. Twenty-eight days out, the team started a digital countdown clock marking the days, hours, minutes and seconds till the big move.

Are props such as these really important, or are they gimmicks? Bray feels that they can have a big impact.

"Visual aids are tremendously important in helping to inspire and encourage teams to collaborate, work together

MAN OF THE WORLD

Dr. David A. Bray, who tweets as @*fcc_cio*, has become something of a celeb in the CIO world and was named "Most Social CIO" by Forbes Magazine and the Huffington-Post last year.

Bray began working for Uncle Sam at age 15 on computer simulations at a Department of Energy facility. Later he designed telemedicine interfaces and space-based forest fire forecasting prototypes for the Department of Defense.

He has volunteered for Habitat for Humanity International and worked as a project manager with Yahoo and a Microsoft partner firm, according to an FCC bio. He was IT chief for the Bioterrorism Preparedness and Response Program at the U.S. Centers for Disease Control and Prevention, leading the program's technology response during 9/11 and other public emergencies. He earned a Ph.D. in information systems from Emory University and two post-doctoral associateships at MIT and Harvard.

He became a Senior National Intelligence Service Executive, advocating for "increased information interoperability, cybersecurity and protection of civil liberties." In 2012, he became executive director for the bipartisan National Commission for Review of Research and Development Programs of the United States Intelligence Community. He has received a number of leadership and achievement awards, and as an Eisenhower Fellow he met with leaders in Taiwan and Australia on cyber strategies for the "Internet of Everything" in 2015.

Tieline News Flash!

New Remote Codec Unveiled

William McLean, CEO Tieline Group of Companies with the New ViA Audio Codec

You imagine, we create...

It's time to reimagine remote broadcasting with the definitive remote codec of our generation. Tieline's revolutionary new ViA portable codec sets a new standard in wireless remote broadcasting and will fundamentally change the way you perform live remotes.

Picture yourself or an announcer taking your codec to a remote site, powering it up and tapping a single button on a color touchscreen to get connected – just like making a phone call. Wouldn't it be great if remotes were that simple? Well now they are – with ViA.

The days of complicated remote codec configuration are over. Tieline's innovative approach revolutionized mobile reporting with the Report-IT Enterprise smartphone app. Now ViA leverages this experience to bring you the simplest and most intuitive codec user interface available today. Going live is literally child's play! Power up, tap "Connect" and go live. That's all you need to do to get connected with ViA

Remotes without limits

Our mission is to empower you with the technology to go live where no broadcaster

has been before, and make it simpler. Thousands of Tieline codec owners have been using IP successfully over the public internet for over a decade, so we know how to do IP remotes! In fact, way back in 2004 Tieline was the first codec manufacturer to offer IP, ISDN and POTS solutions from a single codec.

ViA delivers more IP choices and backup options than ever before. Use ViA's 4.3 inch color LED touch screen to choose which IP interfaces you want to bond and transmit crystal clear, low delay audio from the most demanding remote locations.

Connect using dual LAN Ethernet ports, or 2 USB modems, or use the on-board Wi-Fi module to connect over Wi-Fi. Insert an optional POTS or ISDN module and the codec is instantly transformed to connect over alternative network transports. This means you can configure primary and backup connections over different network transports as required, or use them as your IFB circuit.

Fuse-IP and SmartStream PLUS

With Tieline's proprietary Fuse-IP data aggregation technology you can bond any IP interfaces you choose. Imagine the

WIN A BRIDGE-IT XTRA AUDIO CODEC

Visit our booth at NAB2016 and you could win your own Bridge-IT XTRA IP codec.

How To Enter:

* Visit our booth #N5738 at NAB2016.
* Drop your business card into the draw.
* Competition will be drawn on Wednesday the 20th April at 12pm.
* Winner will notified by SMS or phone.

Terms & Conditions:

* Dealers and Tieline staff ineligible.
* Prize is not redeemable for cash.

Tieline's Bridge-IT XTRA Codec

What's inside?

www.tieline.com

(Continued from Page 1)

peace of mind knowing you can bond 2 USB modem data links from different Telcos and let Tieline's Fuse-IP technology automatically manage the data capability of each link! Tieline understands flexibility is paramount for remotes, so you can even bond a USB modem with a Wi-Fi connection, or bond two Ethernet connections.

ViA also includes Tieline's SmartStream PLUS dual redundant streaming software, which has set the benchmark for redundant IP streaming over the public internet. Some manufacturers charge thousands of dollars for IP management software like SmartStream PLUS as an optional extra, however Tieline believes high performance and rock-solid reliability is an essential part of each and every broadcast, so you get it for FREE.

Nobody likes a traffic jam, least of all broadcasters dealing with IP packet congestion! With Tieline's SmartStream PLUS and Fuse-IP technologies, as well as automated jitter buffer management and error correction strategies, you can be assured of trouble-free motoring on the information superhighway!

Program and Communications

ViA seamlessly integrates with Tieline's Merlin and Merlin PLUS audio codecs to transmit high fidelity, full duplex stereo program audio with a separate bidirectional IFB circuit. As an example, you could use a USB data modem to broadcast your main program feed and another USB modem or Wi-Fi to transmit your IFB circuit. Now that's flexible!

Flexible Options

ViA is flexibility. New input and output options deliver more integrated solutions than ever before, including features like:
- 3 balanced mic/line XLR inputs & 3 headphone outputs
- Digital AES3 stereo input
- Analog or digital auxiliary input
- Plus much, much more…

There are quite simply too many new features to mention here, so we encourage you to come and see ViA unveiled on the Tieline booth at NAB2016 to learn more.

Join the #ViARevolution

Stay tuned for many more of ViA's ground-breaking and innovative feature announcements in coming months. For more information: visit: www.tieline.com/via and follow the #ViARevolution @Tieline on Twitter, or on our Facebook page, and be first to learn about release dates and new features.
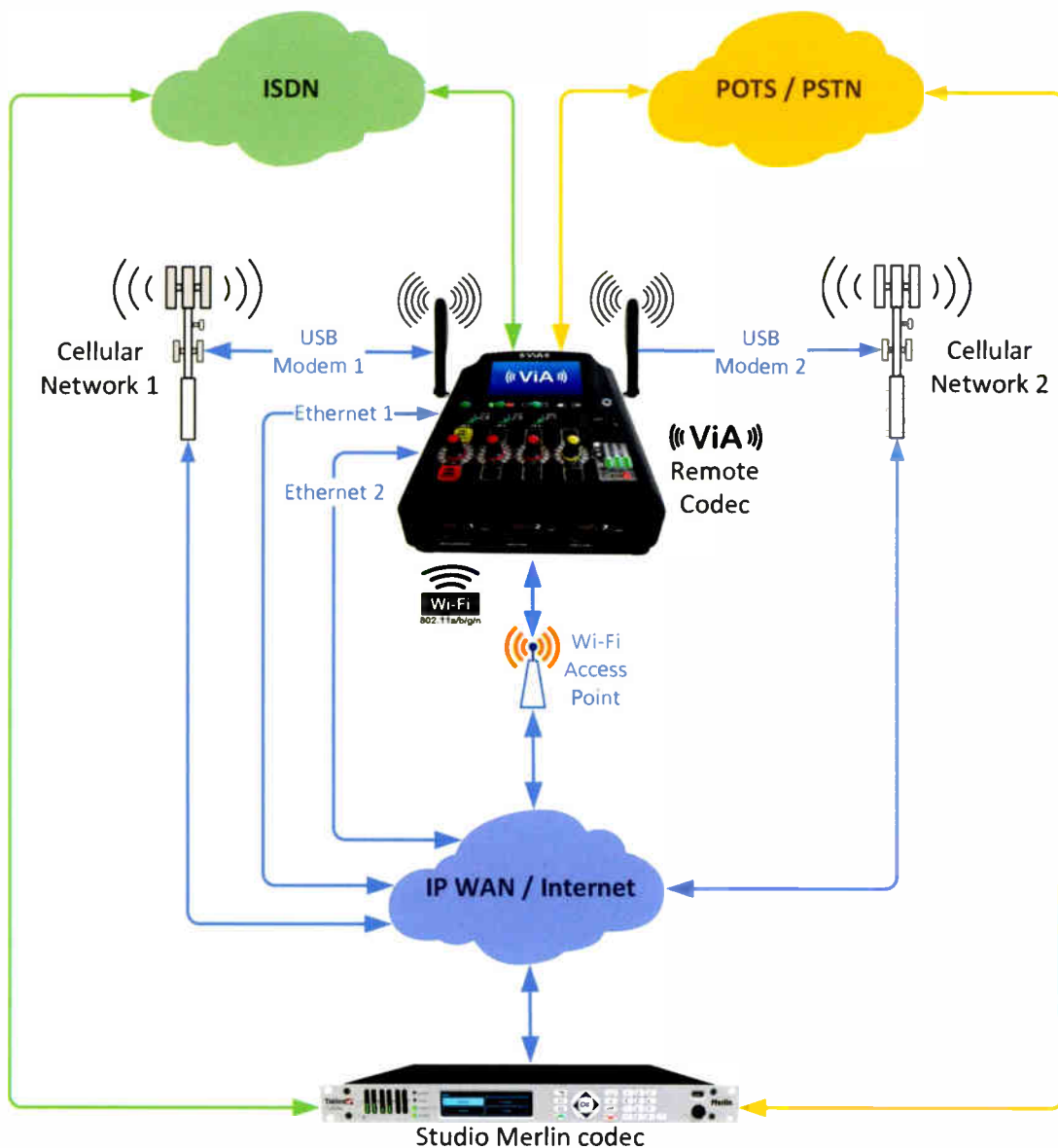
Overview of ViA connection options

Spirit Expands Reach with Bridge-IT

Mark Voris has been Chief Engineer for the Spirit Catholic Radio Network since 2009. Prior to this he was the Studio/Transmitter Engineer for the Nebraska Rural Radio Network for 12 years.

The Spirit Catholic Radio Network (KVSS 102.7 FM) airs a religious talk format, with predominantly Catholic programming. We provide 40 hours a week of local content and the rest of the time we rebroadcast

Mark Voris, Chief Engineer of Spirit Catholic Radio Network

network programming from EWTN and Ave Maria.

Our network covers the States of Nebraska, parts of Iowa, Kansas, Missouri and South Dakota, and we also have an affiliate in Wisconsin. In total this includes approximately 1.4 million listeners.

When I started, the station was using a POTS codec and phone hybrids for remote sports broadcasts. We wanted to utilize IP and mobile data, so we purchased two Tieline i-Mix G3 codecs. These were commissioned as a temporary STL when we moved to a new frequency in 2009. Once a permanent radio STL was in place, the codecs were used for remote sports broadcasts; one unit at the studio and the other out in the field.

A Network of STL Codecs

The distance from studios to transmitters and remote sites is always a challenge. Doing microwave shots isn't very cost-effective, or physically practical. After many years of experience I no longer have doubts about sending IP audio via the internet – it's the predominant way we transport audio. IP technology is always evolving as well and getting better all the time.

We have purchased 21 Bridge-IT codecs and a Commander G3. 19 Bridge-ITs are used for STLs and the Commander is used at the studio for remote broadcasts, with both channels configured for IP and POTS connections. Two other Bridge-ITs are installed at the studio to allow broadcasts on the fly from our remote studio locations.

The Bridge-IT codecs have definitely improved our workflow and they are reliable and self-sufficient. Eight are used for point-to-point STLs. We recently added 9 affiliates to our network, mostly across Nebraska and one in Wisconsin. Two Bridge-IT codecs operate in multi-unicast mode,

to affordably distribute studio program audio to nine units at these affiliates. I also have the capacity to add three more connections, so there is room to expand if required.

Configuring Bridge-IT is easy with the Toolbox web-GUI control. Just yesterday while at a transmitter site I needed to make some adjustments to a codec at one of the remote studios. I was able to log in and make the change. I have all configurations backed up on a PC, so I can just connect a codec to the LAN here at the studio, or a laptop in the field, and easily configure them on the fly.

I have configured static public IP addresses for the studio codecs and have a cable connection with a 20x5 for all my STL audio streaming. The other sites have at least a 3x1 connection and all are wired except one that is wireless. As we are mostly a talk format network, I use Music Mono encoding at a bit rate of 28.8 kbps to reduce bandwidth and data usage. I also like that the STL units in the field can be configured with backup SD cards to keep audio on the air if a connection is lost.

Our affiliate stations have small LPFM racks that two Bridge-IT codecs could fit in perfectly, so the compact size of the unit is helpful.
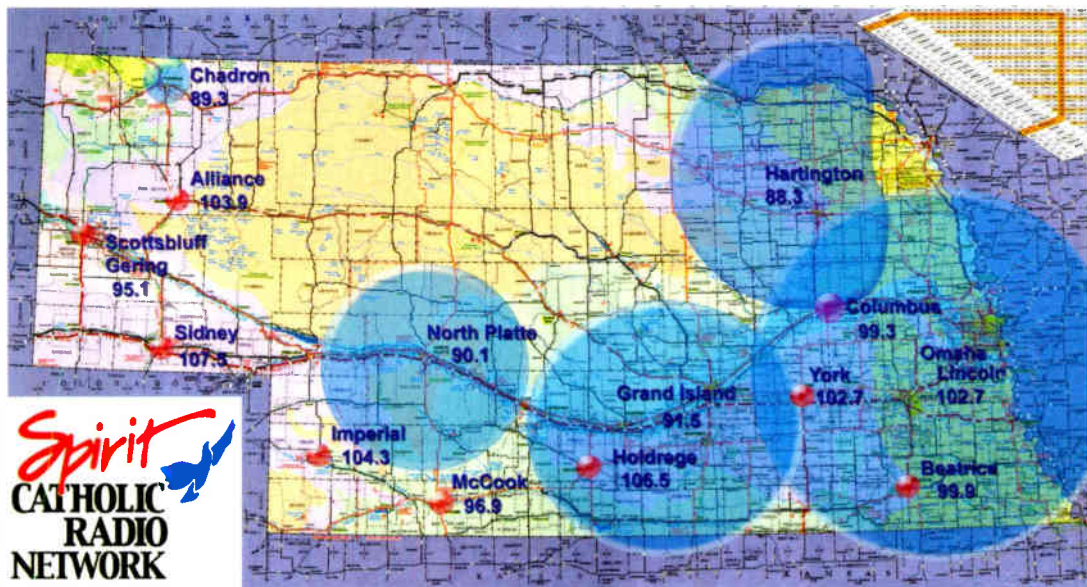
(Continued from Page 3)

Remotes

Our i-Mix G3s don't use ISDN due to the cost, but we will use a POTS line when one is available onsite. More and more with high schools we find that a POTS line just isn't an option, so we rely on IP and cellular data a lot for transporting audio. The i-Mix address books are configured with both POTS phone numbers and IP addresses, so whatever is available we will use it.

We have also purchased 10 Report-IT Enterprise user accounts and we have a few regular folks on our morning show that use Report-IT instead of a low bandwidth phone feed. We also use Report-IT for some of our sports broadcasts by interfacing the phone with a mixer, which gives us the ability to broadcast via IP, Wi-Fi or 4G/LTE. Report-IT Enterprise is simple to configure and our announcers find it simple to use.

Overall the Tieline codecs have great sound quality, flexibility and reliability and our announcers like their ease of operation. I also like Bridge-IT's front panel controls that other low cost codecs don't have.

Latency is not really an issue for the STLs and with the remote connections we have made adjustments to minimize network delay. In future I foresee more remote applications, such as the ability to go live with mass from churches throughout our listening area.

When you evaluate the price of Bridge-IT versus features, the cost is worth it. We are a non-profit group and for us the cost is a big factor. We depend on a product that is reliable and trouble free. Tieline's support is also excellent! Bill Miller is top notch in this field and has helped me whenever I have a question.

Genie STL Delivers Sterling Service

Joe LaPorta is Senior Mastering Engineer at Sterling Sound in New York. He has been nominated twice for Grammy & Latin Grammy awards and is a TEC award winning engineer who joined the Sterling Sound team in 2013. This diverse background and knowledge of music has attracted a wide range of mastering clients from Billboard chart toppers to up-and-coming indie acts.

My story is a bit different to how most people would use Tieline codecs. I live outside New York City and was looking for a way to access my main computer when I wasn't able to get to the studio in a hurry. This was necessary because in the music mastering world I am often asked by a client to complete a project due to very time sensitive situations - which can occur for a variety of reasons. Because mastering is the final stage before duplication and distribution of an artist's project, it's the mastering engineer's responsibility to cater to these strict deadlines.

My mastering rig is predominately all analog gear, so I always need to do my actual mastering processing in the studio. However, there are certain times when I need to remotely listen to my work while communicating with the client. Usually in situations where I need to make additional edits like spacings, fades and sequence changes. In addition, I need to be able to quickly provide finalized master parts like DDPs, MFiTs (Mastered for iTunes) and HD Wavs, once the client has approved the mastering and desperately needs to hand in their project to hit their release date.

The Tieline Genie STL codec has been crucial for me to achieve this remote access. I connect over IP from home and use the AES in/outs on the box to route audio at both ends. At home the codec is connected to a D/A converter for monitoring. The codec allows me to access files stored at the studio and listen to all of my projects that range in sample rates from standard 44.1kHz, up to high resolution 96kHz sampling.

The Genie STL is extremely easy to use and I can instantly start listening remotely with the simple click of one button. I can also monitor my connection at both ends of the IP link using Tieline's Toolbox web-browser GUI and upload files through our personal server at Sterling as required.

The codec has saved me many rush trips back into the city and has led to a more satisfying experience for my clients, because I can help them outside of normal working hours and in urgent situations.
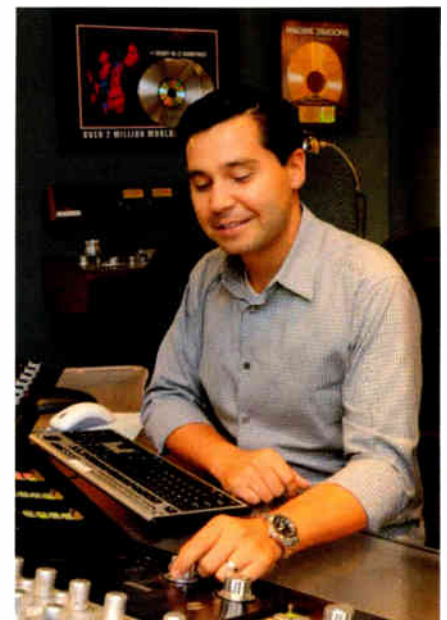
Joe LaPorta, Senior Mastering Engineer at Sterling Sound, New York

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BRAY

and ensure we are all on the same page regarding priorities. We encourage team members to create posters of projects they're working on, in order to visually communicate deliverables and timelines."

Twice a week, the IT team has 20-minute "boardwalk" meetings, where the highest priority projects are rated. There is also a large chart on the wall that anyone can write on regarding status, any issues and resolutions for these projects. These visual images are then translated into digital form so they are accessible across the team.

Bray adds that these boardwalk meetings are an opportunity to build a sense of community.

"We circulate thank-you gifts to recognize above-and-beyond performers from the previous week. There's a mug from Harvard, which is doing a case study on the FCC, and a jacket from the Defense Advanced Research Projects Agency (DARPA) robotics competition. Every Monday, whoever has the jacket or mug signs it and passes it on to somebody else they wanted to give thanks to for their work. In addition, on Thursdays, we have a dinosaur that we dress up and decorate — we call it our

An example of the thousands of cables that need to be managed when moving servers to a commercial service provider.

Thank-o-saurus Rex. It's these little things, the shared rituals that we do as a community, that bring the team together."

As the big day neared, Bray and his team tried to prepare for every eventuality. At stake: about 400 terabytes of data. Bray wondered, "What if the truck transporting the storage area network is in an accident? We could restore from backup, but that's a painfully slow process." Instead, the IT team

Deputy CIO Christine Calvosa takes a brief break after not sleeping for more than 30 hours on Labor Day Weekend. Associate CIO Erik Scheibert used a sleeping bag on the floor. Several people volunteered to work extended shifts.

made a complete copy of the FCC's storage area network. The plan called for the two versions to travel in two separate trucks taking two different routes. "One would not leave the FCC until we had confirmed that the other had arrived safely at the commercial facility," he said.

OPERATION SERVER LIFT

When planning for big events such as Operation Server Lift, you have to factor for Murphy's Law. Bray and his team had pretty well dodged the bullet thus far, but their luck was about to run out.

On the Friday before Labor Day weekend, the team began to reconnect servers at the commercial site. Then they discovered that the thousands of inter-server cables needed to reconnect the 200 servers didn't match up with the network topology documentation that was provided to the commercial vendor.

Steps had been taken, as Bray notes. "We had hired two vendors to do the cabling work, a sub to do the work and a prime to verify the work had been done. Even with that check of two different contractors in place, the problem happened for some of the necessary cables." The bottom line was around half of the thousands of cables didn't match what

was needed, and that meant all of them had to be replaced from scratch.

"It could have been the moment that people just got frustrated or started pointing fingers," he said. "We were facing 55 hours of work over a holiday weekend in order to fix the issue. People could have gotten angry or sad or paralyzed by the overwhelming task ahead, and I would have understood completely. What I celebrate is how they didn't. Instead it was more like, 'What can we do to help? What can we do to get through this? Let's start running replacement cables. Let's get this done.' The team rallied."

Despite sleep deprivation and the complexity of the task, servers were being powered up with the correct cables on Labor Day morning. The deadline for having mission critical systems up and running by Tuesday morning was still in place. And sure enough, the two most important systems, the electronic commenting filing system and public electronic documents were online. Additional applications soon followed. By 8 a.m. on Sept. 10, all of the commission's external applications were online. Operation Server Lift was over.

Looking to the future, Bray sees further gains in efficiency and cost savings.

"Our rack count went from 90 to less than 72, and the goal is to be down to 60 in the next six months. Each rack eliminated is an instant cost reduction. We're going to keep going over the next two years until the rack count is zero. Then, everything will be in the cloud." He adds that an additional benefit is the reduced square footage needed for storing servers in the expensive D.C. real estate market.

Bray said that from spending 85 cent of the IT budget to maintaining systems, the FCC has reduced to under 50 percent. At a Forb Summit in March, he said, fede. Tony Scott praised the commission IT team as a model of "positive change" for other parts of the federal government.

Bray feels Operation Server Lift was the moment when the group really came of age.

"The biggest joy as a leader, even though it's frustrating when you encounter surprises and delays, is when your entire team pulls together and you don't actually have to do anything about it because your team is rallying on their own."

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PIRATES

"It is our sincere hope that this document starts an important dialogue on ways the commission can work with your organization, including gathering the necessary information to help identify and locate the perpetrators of pirate radio stations and educating the public to avoid participating in any efforts to facilitate pirate radio stations." Let's hope it does just that.

The commission also has an interesting page called "FCC Enforcement Actions Against Pirate Radio by Location" with an interactive map that tracks the Enforcement Bureau's efforts dating to 2003. You can see for instance that there have been 450 pirate actions in that time in New York state, but only one in North Dakota. It's intriguing to click around in it; see *http://tinyurl.com/rw-piratemap*.

WHAT THE FCC SAID

Here's the text of the advisory:

WARNING: Unauthorized Radio Broadcasting is Illegal — Persons or Businesses Operating "Pirate" Broadcast Stations Are in Violation of Federal Law and Subject to Enforcement Action

Federal law prohibits operating radio broadcasting equipment in most cases without an FCC license. Thus, perpetrators of pirate radio stations, which by definition do not obtain FCC licenses or comply with Commission rules and requirements, are in violation of Federal law and FCC rules. This prohibition does not discriminate by size of operations, applying equally to the rebellious high school kid operating a radio station from his bedroom as it does to slick and sophisticated high-powered illegal broadcast operations.

What Is Prohibited?

Section 301 of the Communications Act prohibits the "use or operat[ion of] any apparatus for the transmission of energy or communications or signals by radio" without a license issued by the FCC.

Thus, in order to use or operate a radio station, the Communications Act requires that you first obtain a license from the FCC. *[A footnote explains exceptions like CB radio and certain low-power operations under Part 15.]*

If you run a pirate radio station, whether as owner or operator, you could be subject to enforcement action.

Parties found operating radio stations without FCC authorization could be subject to a variety of enforcement actions, including seizure of equipment, imposition of monetary forfeitures, ineligibility to hold any FCC license, injunctive relief, and criminal penalties

What Is the Harm?

Such illegal activity threatens the livelihood and sustainability of existing radio broadcasters and the health and safety of the listening public. Specifically, pirate radio stations can cause interference to other licensed broadcasters and non-broadcast services, not only preventing listeners from hearing the programming on those stations but also potentially preventing listeners from hearing important Emergency Alert System (EAS) warnings aired by those broadcasters.

What Should You Do if You Discover a Possible Pirate Radio Operation?

First, make sure the station is actually a pirate station. FCC rules require licensed broadcast stations to identify themselves each hour using their FCC-assigned call signs, as close to the hour as possible. If the station does not identify with a call sign, it may be a pirate operation. If it does identify with a call sign, you can look up the station using the call sign on the FCC's Consolidated Database System. *[A footnote adds that some low-power unlicensed broadcasting does not require a call sign.]*

If you have reason to believe a station is a pirate station, please send as much information as you have to the FCC. To do so, you can visit *www.fcc.gov/complaints*. Many pirates use false identities or are otherwise difficult to track down, so please provide as much information as possible. We are particularly interested in the location of the broadcast operations and transmitter, frequency, hours of operation, and any other information that would allow us to identify the person(s) behind the potential pirate operation.

Please be advised that pirate radio operators also seek support from landlords or advertisers, including nightclubs, concert promoters and local merchants. Providing support for such illegal activity could not only damage the reputation of such businesses, but could expose them to FCC enforcement or other legal actions.

The advisory ends with contact information; general information on the FCC is available at 1-888-CALL-FCC (1-888-225-5322) or www.fcc.gov.

▶ NEWSROUNDUP

HD RADIO: DTS, new owner of HD Radio, is seeking to expand the technology further into the mid-priced segment. That's one of the insights from an investors' conference call led by DTS Chairman/CEO Jon Kirchner. IBiquity Digital had been posting net operating losses when it was acquired late last year but DTS has "made significant progress realizing operational and financial synergies," Kirchner said. DTS expects to move HD Radio technology "out of the premium priced segment into the more mid-priced segment" while it works on more effective cost implementations on ICs that will hit the market in the next couple years, he said. DTS sees HD Radio as an opportunity to bring its other audio technologies into the car.

INFINITE DIAL: Edison Research and Triton Digital released their annual audience study. A highlight: "Online radio crosses crucial threshold; now listened to by half of Americans weekly." Edison wrote that online radio "has reached a critical new high, with 50 percent of Americans 12+ now telling us that they listened to the medium in the last week." It estimates that 136 million Americans listened in the last week. It defines online radio as an AM/FM broadcast station's webstream or a stream from a dedicated Internet audio streamer. Edison's Larry Rosin zoomed in even more. "We found that for the first time, among 18–24

Weekly Online Radio Listening

year olds streaming audio (that is, audio from Internet pureplays from Pandora, Spotify and their ilk) has surpassed broadcast radio." The study also offered that podcast listening has taken a leap forward.

EAS: FEMA offered an opportunity for "makeup" tests in states where February's big regional EAS IPAWS test was cancelled shortly before airing. Three states were dropped at the request of their emergency management agencies (Florida, North Carolina and Virginia) and three more at the recommendation of the National Weather Service (Alabama, Louisiana and Mississippi). A rescheduled test was subsequently held in Alabama and came together "extremely well," according to the Alabama Broadcasters Association.
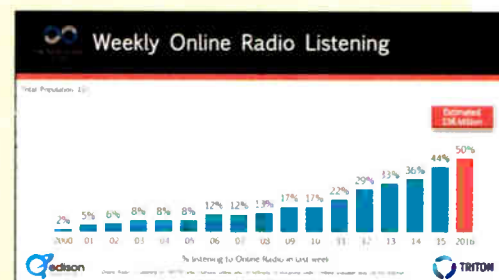
World Radio History

Tips for Building That New Translator Rack

Save yourself some discomfort and pre-build that rack in your shop

WORKBENCH
by John Bisset

Read more Workbench articles online at radioworld.com

I've never seen so many stations filing for and building FM translator sites. If a translator is in your future, these tips from iHeartMedia's Dave Agnew will be helpful.

You may remember Dave from his many years at Harris, working in field service and then as an applications engineer with the FM product line. Given that experience, you know his facilities are going to be built right. This starts with planning and selecting the location of the build.

Dave's cluster is in Aurora, Colo., near Denver. Mountaintop sites aren't the most forgiving for construction, so Dave pre-builds his equipment racks in the warmth of his engineering shop. Pre-wiring speeds installation; by following a "template" for equipment, all the sites are similar. This speeds troubleshooting and reduces spare parts counts.

Fig. 1 shows a rack Dave is working on. This is a two-translator project; open spaces are for gear that is already in operation for the first translator. The equipment seen here includes, from top, an Omnia.7 processor, Audemat RDS encoder and Broadcast Devices switch controller, used as a main/alternate main controller and connected to a four-port

Fig. 1: Why not build that translator rack in your shop rather than on site?

MCI 61101-N RF switch. Finally, there are two Nautel VS300 FM transmitters in a main/alternate configuration.

Pre-building makes good engineering sense, especially if you've tried to solder or wire in the cold! Another benefit is

that all the parts and supplies needed are there in your shop. Dave writes, "You can do much better work in a nice environment, and that translates to better reliability and fewer trips to the site."

Knowing Dave, when his project is completed, he'll add a schematic or block diagram to the door of the rack, so if another engineer needs to troubleshoot in Dave's absence, the process is more efficient.

D ave also asked if I'd seen the small hand-held-sized solid-state computers like the one shown in Fig. 2. Its small size makes it ideal for utility purposes; with no moving parts, it's great for the transmitter site.

This particular model is an Intel NUC, Model NUC5i5MYHE costing less than $500.

R yan Hanna handles engineering for Broadcast South LLC in Georgia. Recently, one of its stations experienced failure of a 900 MHz STL receiver and no backup was available.

To act in its place, Ryan pressed into service a computer, an eBay Chinese USB TV receiver chip dongle and some freeware. This is strictly a temporary setup until the receiver gets back from repairs; but it shows what you can scrape together in a pinch to get a station back on the air.
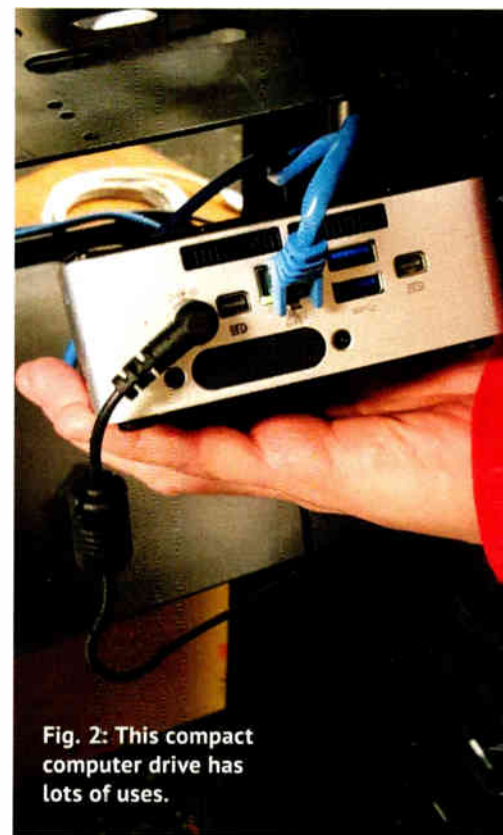

Fig. 2: This compact computer drive has lots of uses.

Ryan is a ham radio operator and has tinkered with everything within his realm of knowledge. These little receiver dongle are made to be wideband digital TV receivers.

"Someone much smarter than I modified the drivers for the software and turned the dongles into ultra-wideband SDR (software-defined radio) receivers," he writes.

There are several different models out now, and they can receive so much: TV, SSB (single-sideband), AM, FM wide or narrow — you set the bandwidth. As we described in a Workbench column in January, New Hampshire Public Radio's Steve Donnell showed how these dongles can even function as spectrum analyzers, although not entirely accurate. Yes, the dongles have just as many cons as pros, but they work great to keep a station on the air.

Y ou may have used tie wraps to hold "wallwart" power supplies on a vertically mounted power strip. A good idea — but if you have to remove the wallwart, you must snip the tie wrap. In an emergency, removing the mounting tie wrap takes time.

A company named CPI makes a Velcro-brand hook-and-loop assembly with mounting eyelet. It's called a SAF/T/GRIP. The strap portion is 12 inches long and the strap will make up to a 4-inch diameter loop. The SKU is 05012-201. Online distributor Surplus Trading Corp. (*www.surplustrading.com*) can provide

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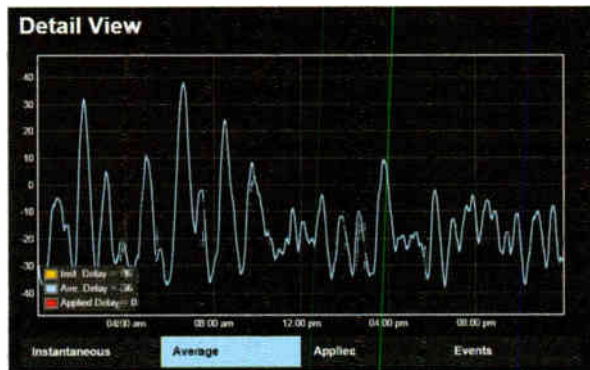
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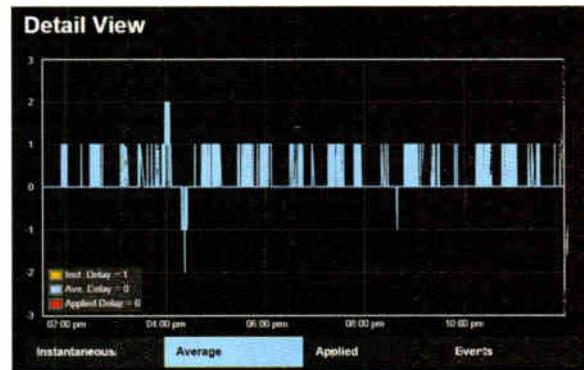
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MARKETPLACE

The Guide: The engineer who has it all doesn't have this yet!

Fresh from the Society of Broadcast Engineers and McGraw Hill Education is the "SBE Broadcast Engineering Handbook." It is subtitled, "Hands-on Guide to Station Design and Maintenance."

For the radio and TV engineer, the book "offers detailed practical information on video, audio and broadcast transmission systems from dozens of the field's foremost experts."

Featuring "everything from basic principles and formulae to the latest technologies and engineering trends, this hands-on resource offers practical and up-to-date coverage of all major broadcast technologies for radio, TV and related fields."

The book contains sections on regulatory issues, RF transmission, DTV transport, information technology systems, production systems, facility issues, broadcast management along with three reference annexes.

Editor in Chief Jerry Whitaker, vice president of standards development for the Advanced Television Systems Committee, oversaw some 50 contributing authors.

Price: $199

Info: www.mhprofessional.com
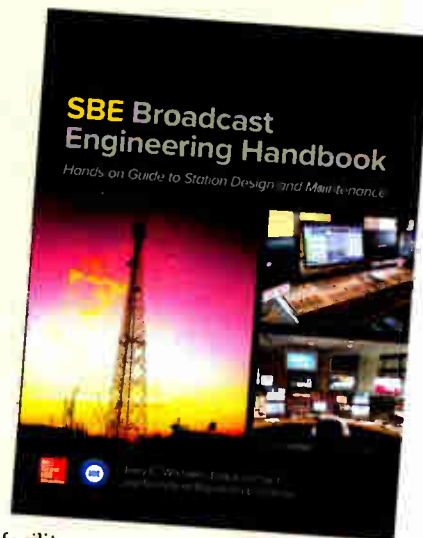
Hiding the Goods: Middle Atlantic Products is launching the UTB Series Universal TechBox.

The UTB installs underneath a tabletop (or on the side vertically), allowing for the mounting of slim equipment out of sight or to make space available on the tabletop.

It is available in rack and half-rack widths and has adjustable 1 RU and 2 RU heights. It can handle both rackable and non-rack equipment. The bottom panel is vented.

Middle Atlantic Products Application Engineer and Project Manager John Franetovich said, "The low-profile and easy-to-install design provides a clean and unobtrusive look with the flexibility to expand from one to two rack spaces, while also providing small device mounting."

Info: www.middleatlantic.com

WORKBENCH

(continued from page 14)

pricing. Enter 05012-201 in its search field.

In addition to securing wallwarts, the mounting eyelet allows you to secure the strap to long microphone cables or extension cords from your remote kit. The hook-and-loop strap won't get lost and turns a snarled box of wire into neat bundles.

We close with some sad news. Jeff Griggs, a field service engineer at Harris/GatesAir, passed away recently. Readers of this column who maintain Harris/GatesAir transmitters more than likely had contact with Jeff as he provided decades of telephone factory service to broadcasters around the world. From 3 a.m. calls to help someone with an SX5 that was off the air, to teaching a class on maintenance of the HT25 in Kuwait, to managing the installation, commissioning and follow-up service for a 2 Megawatt medium-wave DX transmitter for the Voice of Vietnam, Jeff did it all.

Fig. 3: Use this hook-and-loop strap to keep wallwart supplies in place.

Jeff loved broadcasting, and we'll miss him. We offer our condolences to his family.

Contribute to Workbench. You'll help your fellow engineers and qualify for SBE recertification credit. Send Workbench tips to johnpbisset@gmail.com. Fax to (603) 472-4944.

Author John Bisset has spent 46 years in the broadcasting industry and is still learning. He handles West Coast sales for the Telos Alliance. He is SBE certified and is a past recipient of the SBE's Educator of the Year Award.

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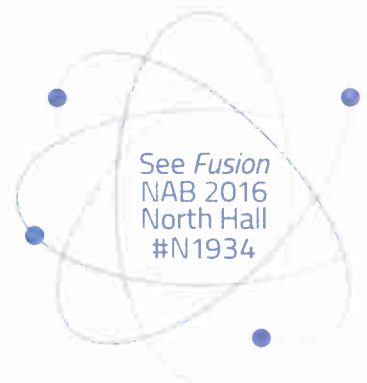
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NABSHOW
Where Content Comes to Life

BFBS

Forces were deployed across the globe, BFBS radio, and later TV services, would be on hand to provide entertainment and news, as well as that vital link with home."

Today, BFBS operates radio studio complexes in the United Kingdom, Germany, Cyprus, Gibraltar, Canada, the Falkland Islands, Nepal and Brunei, as well as transmission services and satellite TV reception in many more countries. It provides 17 TV channels and more than 30 radio streams to troops serving abroad, as well as a U.K. national DAB radio service and 10 regional FM or digital radio services scattered across the country (www.bfbs.com). BFBS also provides the Armed Forces with its own TV channel, Forces TV (www.forces.tv), which concentrates on news stories and documentary and entertainment programming of specific interest to the forces community.

In order to set up studios quickly, BFBS builds studios and communications systems into shipping containers in the U.K. These outfitted containers are sent to conflict zones as "plug and play" facilities; just connect and go.

Intriguingly, these in-theater feeds are not ported directly to local transmitters and antennas. Instead, "BFBS uses VSAT (satellite) links to bring all overseas radio audio streams back to the U.K., where they are multiplexed into our main satellite distribution transport streams," Ramsay said. "This means that we can deploy small FM transmission and DVB-T TV transmission systems without the need for terrestrial

A view from an installation in Kabul in 2002. "At a look angle of 18 degrees, getting line of site to the satellite often meant mounting dishes at height and often on a roof," Ramsay said. "Also it meant our offset dishes looked as though they were pointing down, which confused people."

links or complicated satellite reception equipment."

BFBS Radio is transmitted in conflict zones via FM, AM, DAB digital radio, satellite distribution via settop boxes (DTH) and Internet streaming from BFBS's website and mobile app.

"For TV we use satellite distribution to set top boxes (DTH), digital terrestrial transmission, cable TV distribution — analog and digital DVB-C, DVB-T, QAM and IP — streaming via Wi-Fi to personal electronic devices while aboard ship or at remote FOBs, streaming via Internet and leaky feeder distribution," Ramsay said.

danger feel immediate?

"Traveling by road convoy in the early days in Basra, Baghdad and Kabul were fairly hair-raising," Ramsay said. "We were in white fleet unarmored vehicles, and the threat of IEDs [and] roadside bombs was very real; and we did come under fire from small arms on a couple of occasions. One technician was in a two-vehicle convoy in Kabul, luckily in an armored civilian vehicle, and the other vehicle in the convoy was targeted by a vehicle-borne IED; luckily nobody was badly injured.

"While we were based at the Contingency Operating Base by Basra Airport, we were so often rocketed that it almost became a routine daily occurrence." he said. "When travelling to the Forward Operating Bases in Helmand Province, at the FOBs in which we were installing broadcast services you would hear small arms fire or explosions nearby, and occasionally the FOB would be targeted.

The studio complex under construction at Camp Bastion (known to American troops as Camp Leatherneck) in Helmand Province, Afghanistan. In the photo are the VSAT comms cabin and accommodation units. "There was over 10 kilometers of cable, audio, CAT-5, telephone, satellite, control laid around the site to two studios, two comms cabins, 14 accommodation units and a large office."

"When BFBS services are requested for a new deployment, we often don't know what infrastructure is available on the ground or what local host nation permissions will be possible for terrestrial transmission, so we have to be flexible and agile as regarding radio and TV delivery."

In areas without local studios — such as Sierra Leone, Libya or Ukraine, for example, or in Syria and Iraq if needed in support of any British coalition efforts advising local forces — BFBS uses satellite to downlink content to locally-based transmitters.

"ALMOST" ROUTINE

Radio World wondered what it feels like to work in that environment. Does

"You just have to trust the people you are with, and the safety protection and procedures that are in place; the British Military excel at this, we've never had anybody injured and we've been doing this an awful long time. And when things are going bang and whizzing about, it's best not to take it too personally."

The job can be dangerous but it's not just about foxholes and being under fire. Ramsay said BFBS built a well-equipped multi-studio radio and TV complex/living compound with infinity swimming pool in Afghanistan. "In the end we had a very comfortable compound, and why not," Ramsay quipped. "There is no reason to be uncomfortable if you don't have to be."

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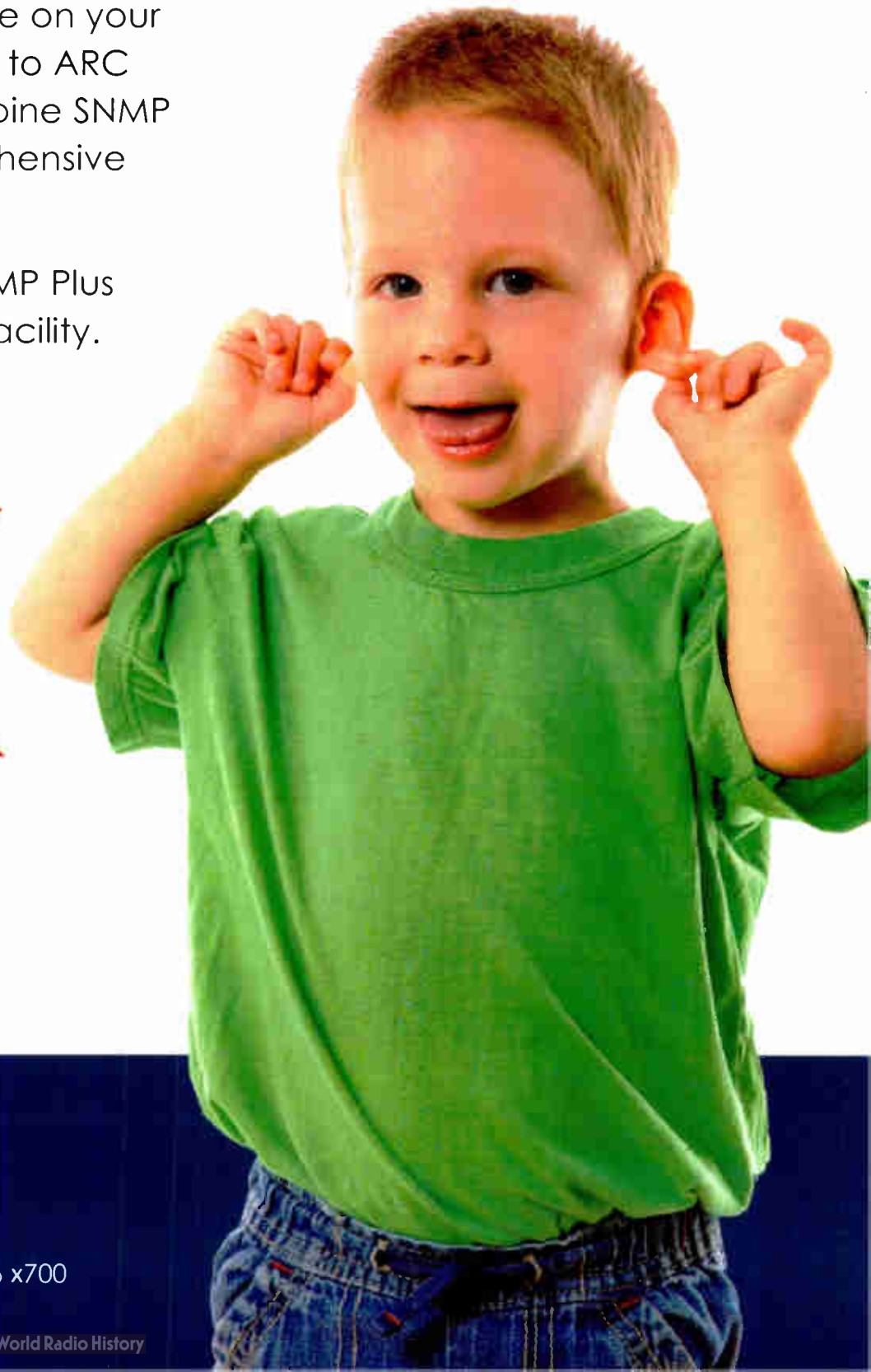
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MetaPub Looks to Get in the Stream

Centralized platform for
public media distributes
program metadata coincident
with real-time streams

▶ RADIODATA

BY ALAN JURISON

NPR Senior Product Manager of Content Production David Julian Gray and Senior Software Engineer/Architect Mike Pilone are developing a new metadata ecosystem for the Public Radio Satellite System.

They'll talk about it in their presentation "A Federated System for Public Media Metadata Delivery" on Sunday morning of the NAB Show as part of the Broadcast Engineering Conference.

The MetaPub platform is intended to bridge the gap between content producers and the software that populates radio displays and streaming audio applications.

More listeners are consuming audio products through such devices, including spoken word formats, yet many stations populate the display with, at best, a name of a program, while others display no information at all.

The MetaPub system is being developed with the input of multiple PRSS content providers such as National Public Radio, American Public Media, Public Radio International and the Public Broadcasting Service. Other notable contributors include Jim Duff, director, product development for PRSS, Kyle Wesloh, director broadcast production and operations of Minnesota Public Radio, has been an active participant, making sure the "Classical 24" stream metadata was available early in the project.

WORKS IN BACKGROUND

An overview of the system is shown in Fig. 1.

Instead of asking content producers to add new processes to their routines — processes that could be overlooked — MetaPub works within their existing workflows and interfaces.

It accesses the information in the background by

Fig. 1
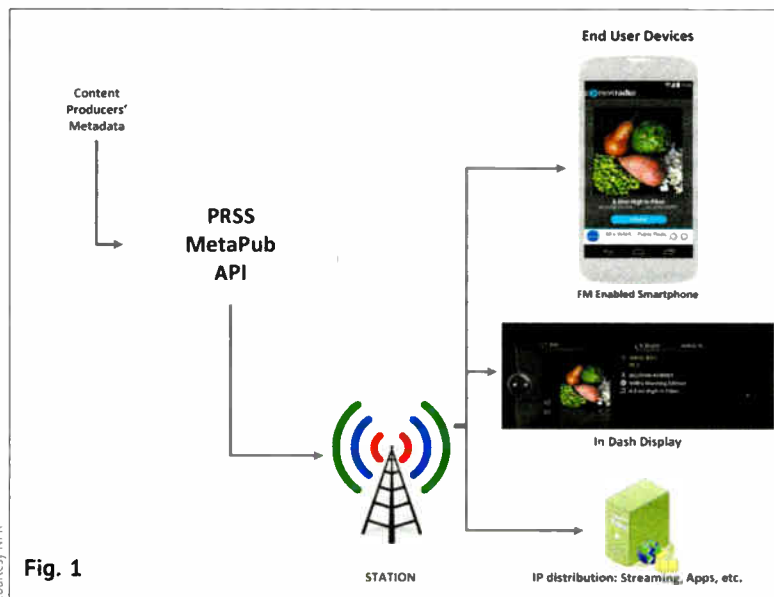
using APIs with a variety of existing content management systems. The information is extracted from these systems, normalized from program to program and content provider to content provider and published in a standard JSON (JavaScript Object Notation) lightweight data-interchange format for other middleware products to optimize and send out to radio displays.

Currently the feed is available over the Internet for products to query and obtain data.

For instance, the middleware application can request information for a specific program, date and time; the MetaPub system will provide the information available for that program. As the system grows and matures, its creators envision this information could be provided in real time over the PRSS satellite system itself and through other channels so that specific calls for information may not be needed.

Early integration efforts include TagStation to

Fig. 2

add visual elements to public radio stations in the NextRadio FM radio application. Efforts also are underway to integrate this information within Arctic Palm's Center Stage Live CSRDS product to send the data to RDS encoders for analog FM radios, and HD Program Service Data (PSD) for HD Radio displays.

The project is ongoing; new enhancements and features are being considered. Future efforts may include integration into network-specific and station-specific applications and websites, something the NPR digital/online and other teams are looking at now.

Currently supported content includes the name of the audio piece; the name of the program with which it is associated; the artist or author of the content; and an image associated with the piece. For example, Fig. 2 shows an example of a report during "Morning Edition" by Allison Aubrey named "A Diet High in Fiber," with an associated image of foods discussed in the story.

MORE TO SHARE

The system supports offsets, so the information could change at various times in a single program.

For instance, the radio display does not necessarily need to be stuck on the same information all the time; it can change dynamically as the topic or story changes within a program segment.
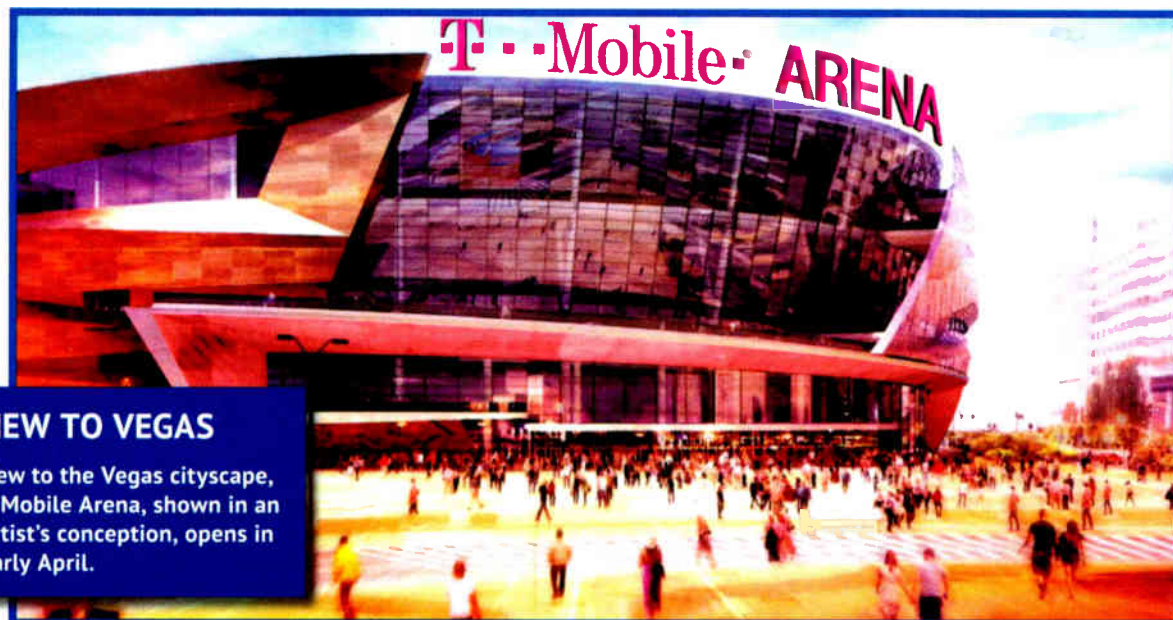
For currently supported NPR-produced news magazine shows and "Classical 24," MetaPub provides live streams synchronized with the material "now playing." Stations playing through a live stream can choose "now playing" or if they offset the material, there are mechanisms to align the metadata with their audio stream. Either way, they have to have accurate metadata dynamically updated to match what the station is playing.

Also in development are embedded links so that, on supported platforms, while someone was listening to a news story on a smartphone, for instance, they could click a link to help them find detailed information or associated content like an article about the topic.

A number of stations are involved in testing the system, representing a mix of markets and technical resources; the organizers are not looking for additional test stations right now, but they anticipate seeking more stations to participate soon. As the national feeds begin to share more content through MetaPub, stations will have that much more content to share.

So what is the project timeframe? "At this point we have been engaged in a limited proof-of-concept project for which a base feature set system is now up and running," David Julian Gray said. "At the same time we have started work to understand the business case. Assuming the effort can be financially self-sustaining, we estimate head-end rollout of a full feature set by the PRSS would take about 18 months. The time for a full system-wide rollout would depend on the rate of adoption by producers and stations and the capacity of the PRSS to keep pace with the demand."

New Kinds of Interference in the FM Band

David Maxson discusses two unforeseen modes that recently have come to light

▶ **FMRADIO**

BY TOM OSENKOWSKY

Two unique, real-world cases of interference in the FM band will be discussed by David Maxson, owner of Isotrope LLC, on Tuesday afternoon of the Broadcast Engineering Conference.

The first case involves the discovery of intermodulation products generated by a radio that was turned off.

Intermodulation occurs when two or more frequencies are mixed together. Maxson reports that he discovered the strange phenomenon while performing an equipment performance measurement of a new FM transmitter.

"FCC Rule 47 CFR §73.1590 requires Equipment Performance Measurements must be made upon installation of a new transmitter," he wrote. "47 CFR §73.317 specifies the maximum allowable emission removed from the carrier."

Prior to making emission measurements off the transmission line sample

iStockphoto/mitja2

inside the transmitter room, outdoor field measurements revealed intermodulation products being generated by an automobile radio that was turned off. The most apparent intermodulation products are third-order in nature.

Maxson prepared a preliminary list of potential third-order intermodulation frequencies prior to arrival on site. The tower upon which this new station's antenna is located is shared by two other FM broadcasters. Maxson explains the calculations as "taking the sums and

differences of the three frequencies or by doubling one frequency and adding/subtracting a second frequency."

After carefully setting up his spectrum analyzer to avoid overloading it, the analyzer revealed 16 spurs representing intermodulation products, many of which fell within the FM band. Maxson turned on the auto ignition to listen to these spurs, only to have them disappear from the spectrum analyzer display. Turning off the radio with the ignition on caused the spurs to return.

Maxson coined the term "Power-Off Intermodulation" or POI to identify this type of product.

Notably, this occurred at a location with ambient RF levels higher than normal. Maxson says it remains to be seen if the phenomenon occurs at lower RF

Broadcasters
strive to deliver quality broadcasts to their audience. Interference of any form limits their ability to do so.
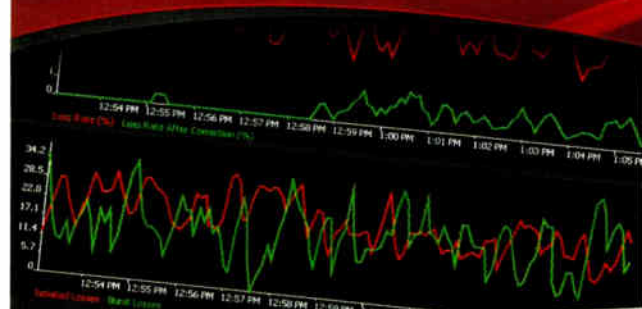
– David Maxson

levels. All levels at the site were within FCC RFR limits.

This phenomenon was previously experienced during bench testing of DTV tuners by Charles Rhodes and his research team. Rhodes has written extensively about this phenomenon in Radio World's sister publication TV Technology.

INTERFERENCE

A DTV television receiver was fed two or more DTV signals to determine if the stronger signals would interfere with the reception of a weaker signal on a third-order frequency. It was discovered that a powered-down DTV tuner became an intermodulation generator on the antenna feed bus. Several tuners were fed by a signal splitter which is commonly employed in a household with more than one receiver fed from a common antenna. With all receivers turned on, the noise floor was clean and flat. With one or more tuners turned off the noise floor became polluted with third-order intermodulation products. It is speculated that non-linearity caused by unbiased diodes facing the antenna are the cause of this problem.

The implications of these cases are the large number of potential interference-generating devices present in the everyday environment. This leads us to the need for further research and possible FCC regulation. All receiver types would have to be studied to determine if they can interfere with the reception of over-the-air broadcasting.

UNWANTED SIGNAL

The second case of interference that Maxson studies manifested itself at an FM station employing an HD Radio transmitter.

Following a brief power failure, the transmitter failed to automatically return to the air. Attempting to manually turn the transmitter on by remote control also failed. At the transmitter site the transmitter operated flawlessly into the dummy load but not into the antenna. A tower crew inspected the transmission line and antenna and no faults were found. Isotrope LLC was contacted for assistance.

Disconnecting the HD Radio adaptive pre-correction sample allowed the transmitter to power up normally and operate at full power into the antenna. Adaptive precorrection provides a quality sample of the outgoing signal that the HD Radio transmitter uses to pre-correct the signal for the power amplifier distortions. In this case, an unwanted signal coming back down the transmission line was strong enough to trick the adaptive precorrection system into deciding there was a fault with the transmitter as it powered up. That unwanted signal was from an unlicensed pirate radio station operating on the first-adjacent channel only four miles away.

Maxson emphasizes why these two cases are important to broadcasters: "In the first case we have an unpowered receiver causing interference. Most people would not expect this. In the second case we have an unlicensed pirate station causing a licensed station to be kept off the air. Both of these warrant further study and possible action on the part of the FCC.

"Broadcasters strive to deliver quality broadcasts to their audience. Interference of any form limits their ability to do so."

His presentation is called "New Kinds of Interference in the FM Band: 2 Case Studies of Stuff You Didn't Know."

GET IN THE HOLE!
That's one way to mike up a golf tournament. The Radio/Audio section of the floor is in the North Hall this year.
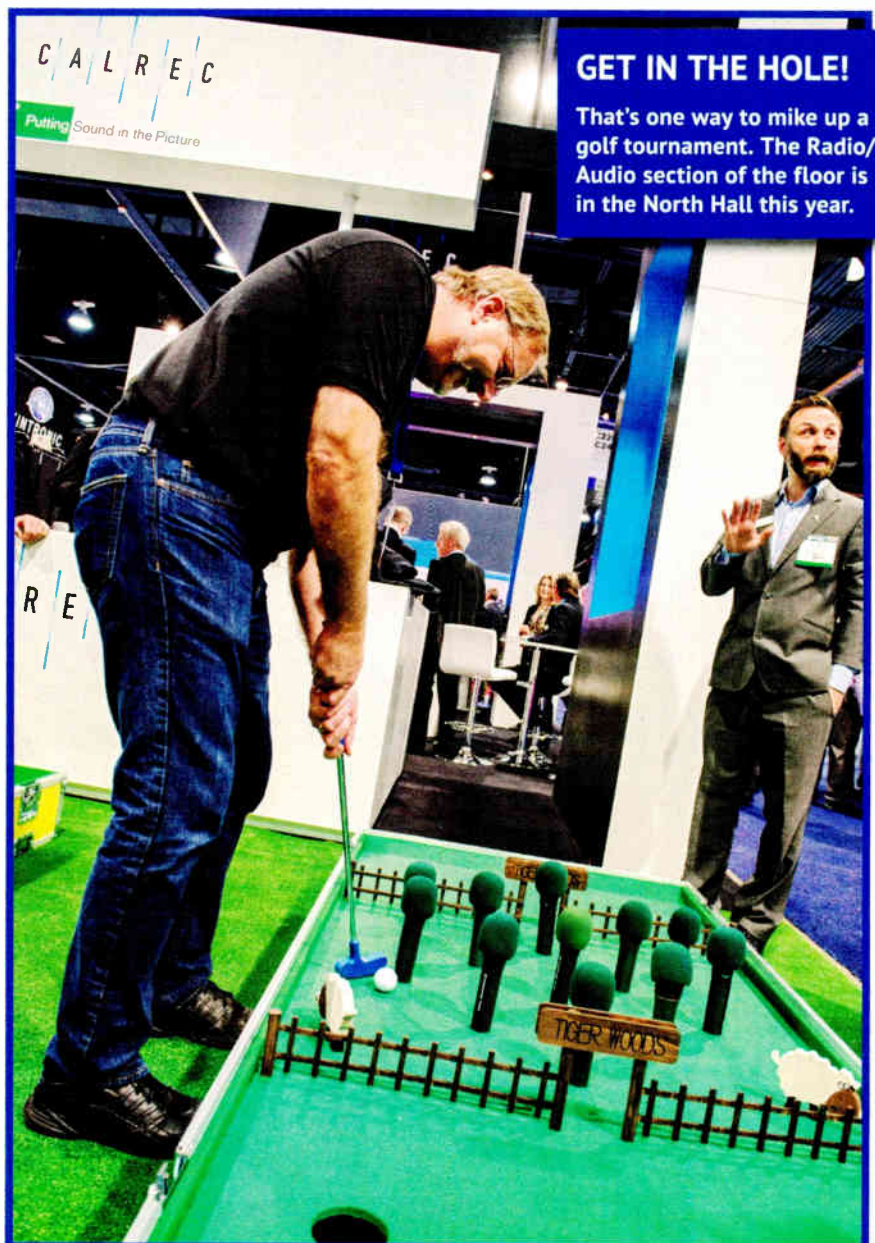
Photo by Jim Peck

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10 INCREDIBLY AWESOME THINGS YOU CAN DO WITH A BLADE BEFORE YOU EVEN NETWORK IT

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When you install the WheatNet-IP driver, you can get rid of your soundcard, its breakout box, switcher, serial interface, and your isolation. Stream up to 24 stereo channels of audio to a WheatNet-IP system (8 per BLADE).

CREATE & MANAGE COMPLEX SIGNAL PATHS

Say you need a mix-minus for a live show or remote broadcast. With our ASSOCIATED CONNECTIONS, you can create a predetermined back haul, IFB feed or mix-minus for each device based on its location in the system or on a fader. When a base connection is made, up to ten additional connections can be made.

PLAY NICELY WITH OTHERS

You've got some other gear you want to use. No problem. Your BLADE is fully AES67 compatible to allow exactly that. We've been to PLUGFEST with our BLADES and we know they work perfectly with anyone else's stuff that's up to snuff.

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There are TWO 8 x 2 mixers built into the BLADE. Why? So you can combine multiple inputs and deliver lovely mixed stereo audio. Of course, you can configure those mixers any way you like.

MAKE FOUR VOICES SOUND AMAZING

With the M4-IP USB mic processing BLADE, you get all this cool BLADE stuff, AND you get FOUR built-in voice processors based on our famous M-1/2.

INTERFACE & CONTROL ALL YOUR STUFF

12 logic universal GPI/O ports along with 128 software logic ports for you to control whatever you have plugged in. When you finally get to a network, control everything on it without breaking a sweat.

PROCESS STEREO AUDIO

Each BLADE-3 has a stereo multiband processor with: 4-band parametric equalizer, 3-way crossovers, 3 compressors, 3 limiters, and a final lookahead limiter - all can be used across a network.

SPIN SOME REALLY COOL AUDIO CLIPS

There is an optional built-in audio clip player that you can use to put emergency audio on the air. Add files, organize the playlist, and fire playback with a logic port, triggered by silence, logic or manually.

USE YOUR FAVE AUDIO FORMATS

There are a bunch of audio formats out there and we've got them covered. HD/SDI, AES, MADI, AOIP, ANALOG, TDM.

DETECT SILENCE AND DO SOMETHING ABOUT IT

The BLADE is constantly monitoring stuff. Silence, for instance. When it finds it, it can do just about anything you want, INCLUDING having it play clips that it optionally stores.

And as cool as all this is, it's just the start. Wait until you network it with our intelligent control surfaces, talent stations, panels and other BLADEs. It'll blow your mind. Learn a lot more at: blades.wheatstone.com

BLADE-3 AN ENTIRE BROADCAST PRODUCTION STUDIO IN A SINGLE RACK SPACE

MIDI and AES70?

AES70 was ratified on January 4 as a rudimentary control standard for audio IP networking. Whereas AES67 gave us a means to move audio signals from point A to point B regardless of audio network brand, AES70 now offers a basic control standard that we can use to add third-party devices to the WheatNet-IP audio network. Think MIDI, only for the broadcast world.

IP audio network manufacturers have spent a great deal of time, money, and energy developing fully realized solutions that handle intelligent audio transport and control. For example, our WheatNet-IP audio network is a complete studio environment with control surfaces, navigator software, button panels, widget GUIs, audio controllers, and more that interoperate behind the scenes in ways that would give a cellular phone network a run for its money. We can control anything, conditionally if necessary, from just about anywhere in the environment.

Read the rest of the story: INN33.wheatstone.com

Your IP Question Answered

Q: Why is a distributed network like the WheatNet-IP better for redundancy than a centralized system?

A: Centralizing network management is a single-point-of-failure waiting to happen, whereas distributing network resources to every IP point naturally builds in redundancy.

If one part of the network fails for any reason, the rest can keep on functioning. Each IP connection point (or WheatNet-IP BLADE) stores the configuration of the entire network onboard, which means that failover is immediate. And because WheatNet-IP BLADEs talk to each other, adding additional BLADEs onto the network is plug-and-play for easy system expansion.

For more IP Audio News: INN33.wheatstone.com

He'd Tell You, But Then He'd Have To, Well, You Know...

You know your audio processor is doing a good job when the engineer says he can't disclose the settings because he doesn't want them to leak out to his competition. We expect that with our AirAura, FM-55 and other Wheatstone processors. But with an I/O BLADE that connects together our WheatNet-IP audio network?

That's what they're telling us. To wit: "I don't want to tell the world what we're doing, but I can tell you we're using one of your streaming presets as our starting point," said Cris Alexander, the DOE for Crawford Broadcasting. He's referring to our BLADE-3s, which serve as I/O connection points in the WheatNet-IP network but also happen to have powerful audio processing on board. Ever the budget-conscious engineer, Cris installed the BLADE-3s as part of the WheatNet-IP system (with E-6 control surfaces) and then assigned them double duty as the processing for web streams. He is using BLADE-3s for processing streams in five markets – Crawford's clusters in Denver, Detroit, Birmingham, Chicago and Los Angeles – for a total of 14 streams. We're talking a very diverse group of formats that range from talk to urban.

Read the rest of the story: INN33.wheatstone.com

Talent Station Gets a Pretty Major Update

These little wonders are showing up everywhere, and now they're even better.

For news booths, interviews, live talk shows or just any place you need control over your network and programming, Talent Stations have become the number one choice. They're tiny, they have exactly what you need to dial up a source and incorporate it into your show, as well as talkback and mute, channel on/off buttons, and now they even have a headphone amp and jack (in 1/4" and 1/8" TRS varieties).

The TS-4 comes in two formats - horizontal or vertical to ensure compatibility with every installation! Just plug them into your switch and they are up and running on your WheatNet-IP network.

To learn more: TS.wheatstone.com

Digital FM MPX Transmission Using AES192

Can the technology open the door to new solutions as the industry evolves?

▶RADIO **AIR CHAIN**

BY THOMAS R. MCGINLEY

For you IT mavens and Googlers, AES192 is a new method of cryptography: Advanced Encryption System using 192 keys to protect data in the cloud against hacking. But if you're an FM broadcaster, AES192 is something quite different.

If you are looking for a cutting-edge, high-performance FM MPX platform to upgrade an analog composite or compressed digital system, AES192 might be the best option that technology has to offer so far.

Rob Meuser, CTO of Engineaux Inc. and a veteran globe-trotting broadcast engineer-consultant extraordinaire, pulls the curtain aside on this platform in his Sunday morning NAB paper "Digital MPX AES192 in The Real World."

The concept was introduced about two years ago but Meuser says few stations have attempted to deploy it.

AES192 DEFINED

AES192 in its simplest form is AES-EBU digital audio sampled at 192 kHz. AES sampling is done at 44.1 or 48 kHz in most all broadcast plants. AES192 allows the FM multiplex signal including baseband audio, pilot, stereo sub, RDS and 67 kHz subcarriers to be processed and transmitted either directly at the transmitter site or from the studio through a broadband wired or wireless IP STL.

> **Meuser will discuss** a real-world deployment of FM MPX AES192 at a major university.

The advantages of using such an approach for FM MPX transmission are many. The primary one is that all the equipment that needs to be configured, adjusted and modified as needs require can be sited at the studio. If the STL is already a digital pipe that can pass it, only an AES192-capable exciter is needed at the transmitter/antenna site.

EQUIPMENT ON THE MARKET

Meuser will identify broadcast equipment manufacturers that are offering AES192-capable STL systems, IP codecs, audio processors and exciters and list their offerings now on the market.

"They all handle the 192 kHz formatting a bit differently but all purport to be backwards compatible to the lowest common denominator and support the Omnia/Nautel left channel only approach," he said. Also he'll discuss the platform and compatibility issues.

Informal industry consensus settled on the 192 kHz sampling rate that excludes the higher subcarriers above 67 kHz in the common MPX stream. Meuser says Orban offers a 384 kHz effective rate that could handle higher subs in the same stream if needed.

Deploying AES192 for FM MPX delivery seems to make the most sense when building a new plant. But it should also be considered for existing plants where the advantages of this method are deemed important and desirable. For many stations, only an AES192-capable audio processor and exciter are the needed hardware drop-in upgrades. Meuser says that's about a $20,000 investment.

STL BANDWIDTH CONSIDERATIONS

The STL system itself must be able to pass AES192 if the processor stays at the studio. Older wireless 950 STLs with AES I/O and single T1s will not work, since bandwidth of about 5 Mb per second is required. The sampling is typically done at 584 kHz in the processor so it must be down-converted to 192 kHz for IP carriage.

Many stations have already upgraded their STLs to broadband digital pipes that can support this bandwidth via IP, either wireless in the 2.4 or 5.8 GHz ISM

unlicensed or 11 GHz licensed band, or fiber. The IP links must be private point-to-point nailed down circuits but they can still potentially be challenged with bandwidth management and stability. As IP technology further evolves and improves, those issues will likely become less of a concern and more options will become available.

AES192 PLUG 'N PLAY

Meuser said, "If the processor is at the transmitter and it and the exciter both support AES192, swapping a BNC coax with an AES XLR cable is worth the effort. It does have very tight peak control and eliminates some sample rate conversions and the convertors themselves. Basically the digitally generated signal in the processor is shoved directly into the exciter's modulator with no intervening alteration. We hit 100.04 percent modulation on infrequent peaks."

He said the idea behind AES192 "is to eliminate everything possible from the transmitter site (except the exciter, transmitter and antenna) thus reducing the necessary skills to maintain it." Clearly, that seems to be the goal station management is pushing onto us as fewer station engineers maintain or even deal with their RF plants, leaving that to contractors. So probably the most flexible and seamless method to deploy FM MPX with AES192 is to place the processor at the studio.

Perhaps the most anticipated part of his paper will be the unveiling of a real-world case study of one station that has deployed FM MPX AES192 successfully. Meuser says the station is at a major university but he declined to reveal the station or location until his NAB presentation due to university constraints. He'll detail the component pieces of that AES192 audio chain setup and present measured results.

NAB SHOW
Where Content Comes to Life

Courtesy SBE

ATSC 3.0 Is Big at Ennes This Year

But program also features digital radio,
drones and production in a carry-on bag

BY FRED BAUMGARTNER

*The author is a trustee of the Ennes
Educational Trust Foundation.*

On Saturday of the opening weekend of the NAB Show, the Society of Broadcast Engineers will present its annual broadcast engineering tutorial.

The Ennes (pronounced EN-es) Educational Trust Foundation sponsors and organizes the program. It is the 501(c)3 charitable, non-profit organization attached to the SBE that supports education through underwriting this and other workshops that travel the U.S. The Ennes Trust also sponsors scholarships, publications and other educational projects that benefit media engineers.

If you are a broadcast engineer of a certain age, you will have read some of Harold Ennes' books on radio and TV systems and maintenance. The Ennes Trust builds on Harold's tradition and dedication to education for broadcast engineers.

The program covers an entire day; the mantra is to cover what broadcast engineers most need to know in a given year. Speakers are invited (there is no call for papers), and are engineers who seldom present publicly but are deep into the technology.

THE 2016 AGENDA

Ever wonder why cell phones have an FM chip built in? Why the mobile network operators (NMOs) resist activation? How the front-end module (FEM) in a cell phone affects what they can and can't do? Qualcomm's Kent Walker takes us through "Cellphone 101 for Broadcasters."

One of the more interesting presentations comes from Nautel's Philipp Schmid. The research engineer digs deeply into the opportunities the evolving radio technologies present and how they can be used in creative ways. Radio is growing into a multimedia platform and maybe into an interactive platform tailored to a mobile world. My favorite part of this is how Philipp sees using the existing technologies and equipment in new ways.

This year, television is getting a lot of attention as much of the current TV spectrum is up for auction and our TV friends will be moving around and performing antenna work; this probably will be inconvenient for a lot of FM broadcasters on shared towers for the next three years or so.

At the same time, TV is moving to a new standard, ATSC 3.0. What's interesting for all broadcasters is that the new standard is multimedia and interactive. This fires one's imagination as there are opportunities for radio and TV to work synergistically on every level from distribution to content.

The program also has some breath mints ranging from celebrating SMPTE's centennial to pieces on UAVs.

Attendees of PBS Techcon and APRE's technical program may attend, as may anyone with an NAB Show full conference registration. SBE members without benefit of NAB membership can receive a $100 discount off the NAB non-member registration rate. Use the discount code EP09. The code is also good for a free exhibits-only registration. The NAB charges a $25 fee for an exhibits-only pass after April 1.

The program lineup can be found at the SBE website *http://sbe.org/sections/news/2016SBE_NAB_Ennes.php* or the NAB website.

For a list of other SBE events at the convention including certification and membership meeting info, see *http://sbe.org/sections/NABShow2016.php*.

ENNES TIMETABLE

8–8:35 a.m.	What You Need for ATSC 3.0 — What's Different From 1.0
8:35–9:10 a.m.	Immersive & Personalized Audio in ATSC 3.0
9:10–9:25 a.m.	SBE Executive Director's Remarks
9:25–9:50 a.m.	ATSC 3.0 PHY — Configurations/Coverage (Putting This Together)
9:50–10:10 a.m.	Demo: A Practical Complete TV Production System in a Carry-on Bag
10:10–10:45 a.m.	Signaling and Announcement Metadata — The next PSIP
10:45–11:15 a.m.	Advanced Emergency Alerting in ATSC 3.0
11:15–11:45 a.m.	Building Out an ATSC 3.0 SFN
1–1:20 p.m.	SMPTE Century
1:55–2:25 p.m.	IP Content Delivery for IP Broadcasting — STLs for ATSC 3.0
2:25–2:55 p.m.	The State of and the Pieces of UHDTV
2:55–3:25 p.m.	Cellphone 101 for Broadcasters
3:25–3:55 p.m.	Digitizing Terrestrial Radio
3:55–4:30 p.m.	Where the Rubber Meets the Cloud — Implementing Television in a Datacenter IP
4:30–5 p.m.	Unmanned Aircraft Systems (UAS) for News Gathering

This is a selection of exhibitors of interest at the 2016 NAB Show. Highlights are paid for by exhibitors; information is from the companies. Check on-site program for changes and full list. Booths preceded by C are in the Central Hall, N is North Hall, SL is South Lower, SU is South Upper, OE is Outdoor-Equipment, MR is Meeting Room, L is Lobby

Exhibit Hours

Monday April 18: 10 a.m. – 6 p.m.
Tuesday April 19: 9 a.m. – 6 p.m.
Wednesday April 20: 9 a.m. – 6 p.m.
Thursday April 21: 9 a.m. – 2 p.m.

25-Seven Systems   N1934

25-Seven Voltair watermark monitor and processor is designed to monitor and enhance watermarked audio. It provides real-time monitoring/analysis of the robustness of your encoding across your program content. Audio signal processing enhances detectability of watermark codes within the context of your programming objectives. Also: PDM — program delay manager.

305 Broadcast   N1530

Your source for broadcast equipment.

360 Systems   N5921

Instant Replay 2, DigiCart EX

AEQ   N1830

NetBox 4 MH IP audio interface handles the need for microphone inputs and headphone outputs, for example in radio and TV studios, stage or multimedia installations. The multichannel IP connectivity (Audinate Dante/AES67 protocol) makes the inputs of the units available at any point of the network. As a complementary feature, the unit offers the same I/Os as analog balanced line inputs and outputs. Also: AEQ Phoenix Venus 3 IP audio codec is the newest in the Phoenix codec line. It has dual Ethernet ports and RS232 serial ports, optional 48 V DC power supplies along with additional multichannel IP networking connectivity using Audinate Dante/AES67 protocol.

AETA Audio Systems   N4137

ScoopFone US is a professional mobile phone for broadcasters specialized for U.S. wireless networks. It offers HD Voice calls at 7 kHz audio bandwidth, VoIP calls and wired IP connections within one unit. Coding algorithms include: Opus, G.722 and G.711. Unlike mobile data links, HD Voice delivers a priority connection with secure quality with lower cost and latency. Also: Scoopy+, Scoop5, ScoopFone HD.

Ampegon   N4035

Our solid-state shortwave transmitter line has new members ranging from 1.5 kW to 25 kW AM carrier power. The Ampegon TSW-SSA product line is DRM-compatible and enables broadcasters to choose between classical AM analog and/or DRM digital operation.

Arctic Palm Technology   N2535

Several new features for our Data Casting (CSRDS) package including HD Commercial content scheduling, logo and static message day parting as well as our Paperless Studio packages for Contest/Prize/Winner management and our paperless CS Copy Management work flow package for copy writers and producers, eliminating paper, printing and sneakernet.

Arrakis Systems   N2835

Simple IP is an affordable solution that gives any station the opportunity to connect its analog or digital equipment via IP. Utilizing AES67 technology, users can use Simple IP with any existing network. Also: Radio Wave is a low-price automation system for Internet radio that gives the user the ability to run unlimited streams per license. Also: DHD-Live is free live assist software, available with any Arrakis Systems USB-enabled ARC or MARC consoles. It is live assist software that gives users custom play lists, hot keys and more. Also: Arrakis introduced Bluetooth to the radio world in 2013. Now, Arrakis has introduced Bluetooth to the ARC-8 with the ARC-8-Blue. The unit gives the user the ability to connect any Bluetooth device, such as cellphones, land lines, tablets. Also: Digilink-HD flagship automation system is more powerful than ever with new features.
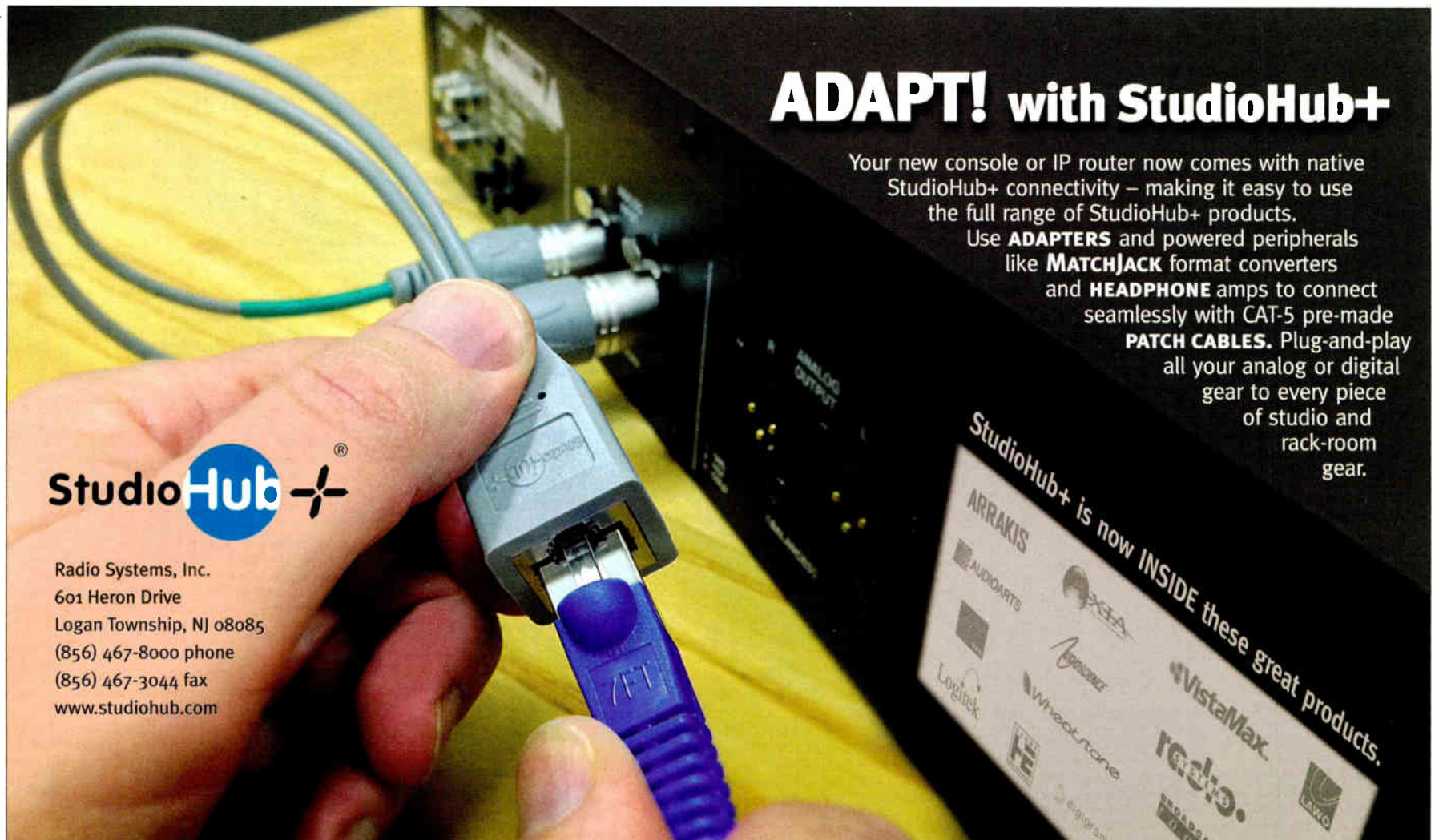
arvato Systems   SU5515

Avatega Rights Management and Planning is a flexible, configurable, multidimensional media rights management platform with automated multiplatform scheduling. It can integrate with sales, finance and media asset management environments.

AudioScience   N4635

Advanced DSP based digital audio peripherals for the OEM, broadcast, installed sound and entertainment markets.

Audio Technology
Switzerland — Nagra   C6349

Nagra Seven 4G is a Nagra Seven equipped with a 4G communication option for file transfer over the GSM networks.

Audio-Technica U.S. Inc.   C7916

The BP40 large-diaphragm dynamic broadcast vocal microphone offers big, condenser-like sound. The diaphragm's patented floating-edge construction improves performance; its humbucking voice coil eliminates electromagnetic interference; and its optimally-placed capsule helps maintain commanding vocal presence even at a distance. Includes multistage windscreen and switchable high-pass filter for excellent pop protection. Also: With lightweight yet feature-rich design, the AT8024 camera-mount microphone offers a simple, powerful solution for capturing high-resolution audio for video. Also: With a compact, portable design, the System 10 Camera-

Mount high-fidelity digital wireless system is ideally positioned to capture media on the go. Available in handheld, lavalier and bodypack transmitter configurations.

AVT Audio Video Technologies GmbH   N3438
The new Magic ACip3 IP audio codec provides three Ethernet interfaces, two digital and one analog audio interface. With the two-channel upgrade the system can transmit two stereo audio signals simultaneously. Important coding algorithms such as MPEG Layer 2, AAC-LD, aptX, Opus, are supported. An additional highlight is the Secure Streaming feature. Also: Magic THipPro ACconnect Upgrade allows control of the Magic THipPro telephone hybrid system and the new Magic ACip3 audio codec via the management software. A Magic ACip3 audio codec will be displayed as an additional "caller line" in the user interface. A shared phone book can be used as well. Also: Magic TH1 Go, Magic TH2plus, Magic TH6 and Magic THipPro telephone hybrids and talk show systems.

Axel Technology   N930
Wolf 2MS monitoring system is designed for FM air signals. Two onboard tuners allow rigorous and precise frequencies scanning, high performance in FM reception, MPX audio encoding and RDS data streaming. The Wolf 2MS will warn the operator about any inconvenience and take the best action to keep the system running.

Axia Audio   N1934
The Axia Fusion modular mixing console features capabilities refined from a decade of AoIP experience: four program and four auxiliary mixing busses, voice dynamics and EQ, automatic mix-minus, integrated IFB/talkback. Virtual Mixer technology, with 16 five-channel VMixers, extends mixing capacity. Anodized metal surfaces feature rubproof laser-etched markings and high-resolution OLED displays. Also: Fusion, iQ, Radius, RAQ, DESQ, xNode audio and logic Interfaces, xSwitch, xSelector, IP Intercom, Softsurface, iProbe.

Azden Corp.   N6729
The SMX-30 stereo/mono switchable camera-mounted video microphone. Also: SMX-15 powered shotgun video microphone. Also: Azden i-Coustics PRO-XD 2.4 GHz digital wireless microphone is easy to use and affordable. Its compact and lightweight design is a solution for capturing audio on the go. For video production, electronic news gathering and mobile devices, the PRO-XD is a complete wireless package. Also: Audio products for video production including UHF, VHF and Digital wireless microphone systems, shotgun and stereo microphones and portable audio mixers.

Belar Electronics   N3730
Belar is adding ADC automated multi-station scanning to its FMCS-1 all-in-one and FMHD-1 digital modulation monitors. The automatic scan function cycles through six presets in one market, monitoring RF signal parameters from one station to the next. For stations broadcasting HD Radio channel, the FMHD-1 applies Automatic Delay Correction for diversity delay. Also: Belar's Automatic Delay Correction software now incorporates Time Window Expansion advanced signal correction features. The advanced signal correction expands the time window by up to eight times, and leverages an "auto range mode" to track the delay and open the correction window if the delay drifts outside the allotted range. Belar's ADC software now includes a gradual ramping feature for broadcasters correcting delay with an audio processor. This application drives smoother transitions between time adjustments, eliminating the perceptible jump that listeners experience as the broadcast shifts between analog and HD. Also: Recently updated IP-connected WizWin software enables broadcasters to view historical performance monitoring data from the previous 24 hours — a major improvement from the previous limit of 30 minutes. Users can connect to Belar's modulation monitors remotely or via a direct connection, and download data to review compliance, trends and more.

Bext   N5434
XL 6000 is a compact transmitter with 6 kW of power in four rack spaces. The company says reliability in challenging environments is ensured by the latest in rugged MOSFETS. The transmitter's menu can be navigated through front-panel touchscreen or remotely through a LAN/Web IP connection. In addition to standard analog and AES-EBU digital audio inputs, streaming audio can be fed to the unit. Available options include digital direct-to-channel FM carrier generation, built-in stereo generator and RDS generator. Like all Bext transmitters, it is frequency agile, locally or remotely. Also: New Cross Coupling FM Combiners series offer the possibility of combining on the same antenna two or more FM channels with very low spacing between the frequencies, as low as 400 kHz apart. Available in multiple cavity configurations and for power levels from 300 W to 30 kW, they are a solid choice for broadcasters who wish to use one single antenna for multiple transmitters, even when the frequency separation between them is very tight. Like all RF combiners and RF filters from Bext, the new Cross Coupling FM Combiners series will provide excellent separation and very low insertion loss.

Broadcast Bionics Ltd. N2538
PhoneBOX, OASIS, Virtual Director, XScreen.

Broadcast Electronics N3030
Trusted partner to broadcasters around the world for more than 50 years, as the premier manufacturer of RF and studio products. Our AM, FM and HD Radio transmitters are rated among the best performers in the broadcast industry.

Broadcast Software International N6429
BSI will debut our newest remote option, Simian Remote for Android. The addition gives BSI a full line of remote options with Simian Radio Automation. We will also show Op-X Automation, WaveCart, Stinger and SkimmerPlus Audio Logging software.

Broadcasters General Store — BGS C2330

BroadStream Solutions N6315

BSW N1238

BTI Business Technology Inc. N4913
BTi Election Voting Attendant software automatically captures and configures your local, regional and national election results and delivers it to viewers on air, online and to mobile devices. Unlimited input and output; futureproof, interfacing with any CG.

Burk Technology N1538
The Plus-X SNMP is a full-featured SNMP manager

inside the ARC Plus Touch. Connect to both Plus-X and SNMP devices over existing LAN and WAN. Control and monitor any SNMP device. Save time and reduce wiring cost. Consolidate management traffic in the ARC Plus Touch and conserve inter-site network capacity. Also: PlusConnect Nautel NX is a PlusConnect interface for Nautel NX-series transmitters. PlusConnect I/O units provide direct links between the ARC Plus family of remote controls and a range of popular transmitters. PlusConnects are easy to install and configure, and each unit includes a customized AutoPilot operator interface for graphical transmitter control. Also: ARC Plus Touch, ARC Plus SL, ARC Solo, AutoPilot, Climate Guard, Plus-X EM32, Plus-X Dual IP-8 adapter, Plus-X GSC adapter.

BW Broadcast N2838
Our transmitters have been getting stations on the air for over 15 years, and have been LPFM-certified for 12. That tested platform is now being taken to a new level with our award-winning V2 FM transmitters. Also: Whether you are setting up a new installation or looking to improve an existing, choose an RBRX encore rebroadcast receiver that can pull in weak signals and rebroadcast with clarity, even at difficult sites with challenging conditions. Also: Organizations such as the BBC rely on BW Broadcast processors for their audio processing. Making your radio station stand out on an already crowded dial is not easy. Also: the BW Broadcast Plan B encore is an audio backup device that is more than a silence monitor. It offers a vast number

of alternative audio sources options: internal flash memory, external USB, IP stream, audio inputs on the back panel and even switch to external equipment via the GPIO contacts. Also: Ariane Sequel Audio Leveler pre-processes and brings less capable broadcast boxes to life, or it protects an STL or can operate as a standalone streaming processor.

Coaxial Dynamics N7229

Comrex C1633
VH2 is a VoIP-based two-line telephone hybrid long-requested by our customers. Similar in function to Comrex's DH22 (which works on analog phone lines), VH2 provides users with the capabilities of a two-line digital hybrid, as well as the benefits of VoIP. With simple front-panel controls, VH2 enables users to manage telephone in excellent, studio-grade quality audio. Many broadcasters find VoIP trunks to be more cost-effective and readily available than traditional phone lines. VH2 also connects directly to several VoIP PBXs. Also: Designed to support the unique needs of remote broadcasters, the Comrex Connect Modem is a high-powered, industrial-strength 4G/LTE modem. Outfitted with a high-gain antenna, the Connect Modem is powerful enough to handle the heavy data load of an IP audio broadcast. Comes in three varieties: Verizon, AT&T and international. PTCRB and carrier-certified. Also: CrossLock, a new feature included with Access firmware 4.0p3, provides an added capability for bonding, which enables multiple networks to be utilized at once.

In addition to network bonding, the user can configure multiple networks for redundancy mode, a better choice for reliability on higher bandwidth links. Additionally, forward error correction and other Access reliability tools are included with the firmware. With Access' portable user interface and BRIC algorithms that set the standard for innovative remote broadcasting equipment, Access 4.0p3 enables higher quality, lower latency and improved stability from more locations. Also: Fleet Commander is a software application designed for users who manage large numbers of Comrex audio codecs. Rather than logging into each codec through its individual web interface, Fleet Commander enables users to control their fleet of codecs from a unified control panel.

CPI - Eimac Operations N3830, SU5402
Power grid tubes — new and rebuilt.

Dalet Digital Media Systems SL3905
Dalet Galaxy.

Davicom, a Div. of Comlab Inc. N3532
The DVLC-1 lightning strike counter allows Davicom Intelligent Remote Controls to detect and count the lightning strikes sustained by a transmission tower. It gives site operators better situational awareness as to the reasons why their site could have stopped transmitting. The DVLC will tell the operator if the site has been hit. Also: The USI-1 universal SNMP interface for Davicom units is for the monitoring and control of any on-site SNMP-enabled equipment

through Davicom's DV-Mini and 208/216 units such as power generators, encoders, microwave links and transmitters. The USI-1 is included and built-in to Davicom's DV-Mini and 208/216 products. Also: TSH-4 temperature sensor hub provides easy interconnection of up to four Dallas Semiconductor (now Maxim) one-wire temperature sensors. Interfacing with Davicom's Intelligent Remote Control units is achieved through the unit's Modbus Interface. Also: The BKB-1 Brand B Interface Harness allowsreplacement of Brand B remote controls by Davicom DV units. Rewiring is as easy as removing the cables from the Brand B remote control and connecting them through the BKB-1 to the new DV unit. The existing I/O panel remains. Also: The Small Form Factor Power Supply (SFFPS-12) is a 1 RU, 10 A, 12 VDC unit that saves rack space and supplies power to its Intelligent Remote Control systems. The SFFPS has no fan and comes with a 12 V battery charger allowing easy setup of a reliable UPS to keep the Davicom units running during critical situations. Also: Davicom Intelligent Remote site monitoring and control systems, DavLink software, DavNet multisite alarm management software, monitoring sensors, AM-FM broadcast monitor, AES/EBU audio detector switcher.

DAWNco   SU3406

Our new C and Ku Band LNBs will improve reception, when using "finicky" new satellite receivers. They have the best specs for stability, and for 1 dB gain compression. Our improved LNBs can actually boost EbNo readings on new DVB-S2 and MPEG4 satellite receivers. Low 250 mA power draw. Also: Reliable satellite reception is achieved, with our jumbo 5.0 meter antenna. This big dish will produce the best C/N performance for your "finicky" new digital channels. A massive 16-inch diameter kingpost maintains proper reception in windy weather. The reflector is delivered to your site in its original factory-perfect one-piece configuration. Also: Super low-loss DAWNflex satellite signal cable can be used for runs that are over 300 feet long. Improve signal quality on your satellite downlink, by reducing loss on signal cable run from dish to building. Flexible coax passes signals to 3 GHz including satellite L Band. Also: HEATsat electric sat antenna heating system prevents snow outages. Specify the dish size and make for the kit. Choose standard half coverage, or full coverage. Kit includes custom sheets of heater matting, to apply to dish backside.

DaySequerra   N3426

M4TimeLock Diversity Delay monitor is an AM/FM solution that runs TimeLock algorithm to measure the diversity delay error between an HD Radio signal and legacy analog signal. It can send correction vectors to processors made by Orban, Omnia and Wheatstone along with HD Radio exciters by Nautel and GatesAir. Also: M4DDC TimeLock Diversity Delay Control is an AM or FM solution that runs DaySequerra's TimeLock to automatically maintain perfect time alignment and audio level alignment of the HD Radio audio to legacy audio. It has a webserver and it provides 8 seconds of delay without compromising PPM watermarking.

DEVA Broadcast   N4037

FM radio modulation monitors, RDS/RBDS encoders and decoders, broadcast audio processors,

remote controls, off-air monitoring receivers and other systems for the broadcast industry.

Dielectric   C2213

The DCR-U is a full-band, high-power, side-mounted circularly polarized FM antenna. Its pressurized point and 4-inch balun supports high powers and voltages in combined multi-station operations. Its broadband four-pole design provides excellent circularity for horizontal and vertical polarizations while maintaining an equal H/V ratio — important for mobile reception. Also: FM 2-Channel Combiner efficiently combines two FM stations (−10 dB IBOC-compatible) to one antenna. The lack of coaxial tee junctions lowers costs, increases

efficiency and reduces size in space-challenged RF plants. The cross-coupling design of the FM 2-Channel Combiner tightens signal isolation, and is field-tunable band-wide for frequency changes.

Digital Alert Systems   N3422

DASDEC V3.0 software for advance EAS/CAP compliance software features dozens of functional and operational improvements, including Source Manager, a way to selectively process EAS messages and reduce compliance complexity. Fully-compliant with FCC's requirements, V3 is the next step forward to the perfect EAS/CAP system. Also: DASDEC product family; DASEOC for EAS/CAP to IPAWS message origination by Emergency

Operation Centers; MultiPlayer four-channel audio player and program switcher for EAS solutions.

Digital Jukebox/DJB Radio   N1335

DJB Starter LPFM start-up software, DJB Starter Bundle adds more training & annual support. DJB Satellite for AM-FM radio includes web setup and annual support. DJB RADIO automation designed for NPR mid-major market radio, live assist features, auto import, wide area & large database.

DPA Microphones   C3336

The d:screet slim miniature microphone was developed in response to a growing need for a near-invisible body-worn microphone. The micro-

phone features the company's omnidirectional capsule element in a flat head, a slender cable and a button-hole mount accessory designed to fit into a space as small as two millimeters. Also: d:fine in-ear headset microphone, d:facto interview microphone, d:dicate 4017BR shotgun microphone, d:dicate 4018C compact supercardioid microphone, d:screet 4080 miniature cardioid lavalier.

Dynamic Drive Pool   SL8505

MicroDDP10GbE is a portable low-noise, low-power, 1 U, 19-inch wide, 10-inch deep, 11-pound Ethernet SAN shared storage solution on RAID5 SSDs with dual-10 GbE/RJ45, dual 1 GbE/RJ45 ports and 2200 MBps bandwidth. Up to 16 TB capacity. Also: MicroDDP1GbE is a portable, low-noise, low-power, 1 U, 19-inch wide, 12-inch deep, 11 pound Ethernet SAN shared storage solution on RAID5 SSDs with seven 1GbE/RJ45 ports and 700 MBps bandwidth. Up to 16 TB capacity. Also: The V5 DDP software package allows multiple microDDP base drive systems to be used as building blocks and combined into one Dynamic Drive Pool system. On the fly microDDPs with data can be added of split off and used elsewhere. Also: Standalone Dynamic Drive Pool DDP base systems such as DDP16D, DDP24D, DDP48D and miniD-DP48D. Redundant DDP solutions such as the DDP16EXR stack and the DDP60EXR stack.

Elenos/Itelco   N1530

The latest addition to the digital ETG Indium family is a compact 5 kW model. The digital exciter is inte-

Courtesy Nautel

grated in the transmitter using digital signal processing structures. This permits high audio quality, advanced signal-to-noise-ratio and very low total harmonic distortion. It offers SFN operation. The planar technology helps save energy. It can be monitored remotely via a Web app and SNMP manager. Also: The E10000 is a 10-kW FM amplifier in 4 RU that offers an overall efficiency of up to 70 percent. The transmitter has the latest version of the "Ecometer" power programming software (manageable using iOS/Android App), allowing for even more electricity savings. Also: Avatar network manager is an innovative remote control system. It offers users monitoring for energy management, maintenance, signal quality and measurement and network management.

EMC   SL9605

IsilonSD Edge is a software-defined storage solution that allows media companies easy access to production and talent wherever stories are created and captured. IsilonSD Edge extends the media data lake across geographies, allowing "follow-the-sun" content creation and delivery from remote facilities. Synchronization with remote assets reduces inefficiencies and accelerates production times. Also: EMC Isilon CloudPools enables isilon customers to archive or tier assets to an in-house (private) cloud, or a choice of public cloud providers, or a combination. This gives a media organization the flexibility and simplicity to dynamically expand beyond their current capacity and archive storage into any cloud-based solution. Also: OneFS 8.0 improves availability

for Isilon storage clusters. It includes many features, but the ones that are critical for media and entertainment include nondisruptive operating system upgrades, upgrade rollback, and nondisruptive operations. In addition, OneFS 8.0 incorporates support for SMB3.0 Continuous Availability for increased reliability and availability for Windows clients.

ENCO   N2518

EnCloud can remotely record voice tracks, perform library maintenance, adjust playlists and send remote controls, all from a browser, tablet or smartphone. Also: The AIM-100 audio insertion manager is a simple, high-quality solution for 21st CVAA compliance or other text-to-speech related tasks in live TV. Using ENCO's automation intelligence, AIM monitors, prioritizes and converts weather, sports updates, emergency alerts and other text information to audio using a natural sounding text-to-speech converter. Also: The Visual Radio application turns any radio station into a multimedia experience with voice-controlled camera switching, music video playout, and graphical overlays. The flexible platform allows for manual control using a familiar video switcher design, or automated, playlist-driven delivery. A user-friendly live assist interface eliminates complicated software and library management. Also: DAD radio automation, ENCO1 virtualized servers.

ERI-Electronics Research Inc.   C2324

The 136 and 836 integrated FM channel diplexers offer an economical solution for combining two FM stations into a single dual-channel antenna.

The 136 is rated to 1 kW per input and the 836 is rated to 15 kW (30 kW w/fans) per input. Requires channel spacing of 1.8 MHz or more. Also: Rototiller FM antennas, 1180 series master FM antennas, Axiom master FM antennas, MACXLine and 1329 line rigid coaxial transmission line, CommScope Air Heliax products, guyed and self-supporting towers, FM bandpass filters, channel combiners, low-pass harmonic filters, coaxial motorized switches and patch panels, FM switchless combiners, directional couplers, 788 series high-efficiency analog/ HD Radio diplexer.

ESE C2539

ES-185E is a GPS master clock/timecode generator that receives accurate time and date information from GPS satellites and supplies this data to the user in a variety of forms. A 12-channel receiver is employed offering an accuracy of better than 10 nS, and is entirely self-setting. Also available with an NTP Server, model ES-185E/ NTP6. Also: The ES-188E is an NTP-referenced master clock/timecode generator. It displays nine digits of time as received via user selected NTP server. Simultaneously, generates several types of timecode including SMPTE LTC, ESE-TC89, ESE-TC90, ASCII, EBU, IRIG-B and a 1 PPS signal, allowing easy interface with new or existing computers, automation and clock systems. Also: The ES-160E crystal-based master clock/ timecode generator that employs a temperature-compensated crystal oscillator (TCXO) which provides an accuracy of one second per month. Six 0.56-inch yellow LEDs display the real time or date while the unit simultaneously generates several types of timecode. Also available with an NTP Server, model ES-160E/NTP6. Also: The ES-410 generates a stable source of 10 MHz and 1 PPS using GPS satellites as reference. The unit provides 10 MHz in both sine and square wave form. Four sine wave and four square wave outputs are provided. Also: The LX-5212U is a 12-inch digital and analog clock. The unit is designed to read and display time as received from most any source of timecode. Alternatively, the clock may be manually set and operated in standalone mode. Six 1-inch-high LEDs display hours, minutes and seconds. Established Products: Master clocks, remote clock displays, NTP products, frequency standard, SMPTE/EBU timecode, timecode converters, digital clocks and timers, distribution amplifiers, video and audio products, time control systems.

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Eventide N6833

Profanity delays, precision delays, production effects processors and plugins.

Frontline Communications C6508

ENG transit, Weather Chaser SUV, ENG/DSNG NV HR, ENG NV HR.

G&D North America Inc. N562

GatesAir N2512

PowerSmart Plus is the next generation of GatesAir's PowerSmart 3D architecture, driving the high-efficiency transmitters. PowerSmart Plus delivers power efficiencies of up to 50 percent ATSC — 20 percent more efficient than leading competitors and 170 percent more than legacy air-cooled UHF transmitters. Also: The IP Link MPX is a full-duplex product which enables the distribution of 100 kHz spectrum of analog FM composite multiplex signal across IP networks. The IP Link MPX supports multiple input/ output ports for signal redundancy, decoding of RDS and audio signals, and can incorporate external SCA signals. Also: Flexiva FLX liquid-cooled radio transmitters, Flexiva FAX air-cooled transmitters, Flexiva FAX exciter, VMXpress IP audio and logic interface, Oasis and NetWave audio consoles, Intraplex IP Link 100, 200 and 100P codecs, Intraplex LiveLook network analysis software, Maxiva ULX-T liquid-cooled TV transmitters.

Gepco/General Cable C8312

Analog audio cables, digital audio cables, fiber-optic cables, SMPTE 304/311 hybrid fiber optic cables, Cat-5e cables, Cat-6 cables, Cat-6A cables, cables for special environments, standard and custom assemblies with premium connectors, standard and custom breakout systems with premium connectors, custom panels, harnessing, blown optical fiber systems.

Glensound C2948

The Expedition is a 4G LTE and 3G UMTS 7 kHz HD Voice cellphone. It also offers calls on 2GGSM. It is a small battery-powered unit for two users: two XLR inputs and two 1/4-inch headphone

jacks. Power is from six AA batteries or via DC. Expedition is for news/sports reporting and commentary/talkback situations. Also: The Paradiso is a three-user commentary unit with local analog and AES I/O. It also features a Dante network audio interface, providing primary and redundant fiber and Cat-5 links to the network, with primary and redundant power. A built in Web server allows remote control of incoming gain levels. Also: The Signature Series is a new range of utility audio units. It features a selection of analog and digital distribution amplifiers, stereo headphone amplifiers and silence detectors. All units can have redundant power from a master six-output power unit.

Gorman-Redlich Mfg. Co.   C1121
Now available is the CAP-CP, a CAP converter for the Canadian broadcast market. Also: CAP decoder, EAS equipment, NOAA weather receiver, digital antenna monitor.

Henry Engineering   N3530
The AES DigiSwitch 3X1 is a three-input, one-output switcher for AES digital audio. It accepts up to three AES inputs, selects one for output. Zero-delay, zero latency and bit-accurate. Power-up programming, control via front push buttons or GPI interface. Also: Power Pod is a power supply unit for Talent Pods, Sports Pods, MiniPods, and Guest Pods. One Power Pod can power up to 12 devices via easy Cat-5 linking. Quieter and more reliable than using a "wall transformer." Power Pod allows use of Guest Pod headphone stations without needing a MultiPhones master unit. Also: The SuperRelay II is a new version of the Superelay. It now features direct-powering of LED "On-the-Air" warning lights. LED output can supply up to 300 mA at 12 VDC, with built-in flasher. AC talley light output is included, and both can be used simultaneously. Also: The AES Digital DA 2X4 is a distribution system for AES digital audio signals. Two inputs (AES and S/PDIF) and four AES outputs, all are individually transformer-isolated. Zero-delay, zero latency and bit-accurate. AC powered; no "wall warts." Also: Matchbox, Superelay, USB Matchbox II, USDA, MiniPod, Talent Pod, Sports Pod, AutoSwitch, Powerclamp.

IHSE USA LLC   SL13916
KVM extenders and matrix solutions.

Imagine Communications   N2502
Landmark xG Open is an open API-based solution that allows media companies to participate in sales via programmatic exchanges. This solution enables users to streamline the advertising buy-sell process and support overall campaign stewardship with near real-time performance feedback to the buyer.

Inovonics Inc.   N3135
Inovonics' versatile off-air 525 AM mod-monitor is now up-to-date with an integral IP-networking interface, the 525N AM modulation monitor with networking. Tune the band, listen to off-air audio and read metering, peak flashers and alarms from any remote location with PC, tablet or smartphone. Programmable alarms dispatch email or text notifications to selected personnel. Also: The SIMON 614 offers simultaneous monitoring of up to four separate Internet radio streams. In addition to multiple-stream monitoring, the SIMON 614 has an intuitive Web interface that supports email/SMS alarm messaging and SNMP. It is compatible with virtually all audio networking protocols and encapsulation formats. Also: A total-remote-control AM receiver, the INOmini 637 AM SiteStreamer allows you to tune and listen to the AM band over the Internet and sequentially-monitor up to six stations. It also delivers an RF spectrum display and can dispatch email or text-message alarms for audio or signal loss. Also: The INOmini 638 HD SiteStreamer lets you monitor up to six sources of FM and HD Radio programming from a remote site over the Internet. Tune, switch modes, listen and receive email or text alarms for various reception problems. Also: The INOmini 223 is a versatile, DSP-based multimode audio processor that meets multiple broadcast needs. Quick menu-driven, application-specific setup for NRSC, European or shortwave AM broadcast; Traveler's Information Service; monaural U.S. or European FM; analog SCA services. It offers three-band processing with selectable crossovers, EQ and tight limiting with pre-emphasis protection. Established Products: JUSTIN 808 HD Radio delay processor, 531N FM modulation analyzer, INOmini 636 NOAA receiver, INOmini 635 FM SiteStreamer, INOmini 632 FM/HD Radio monitor

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iZotope   SL9810
In order to expand expertise on iZotope RX's audio repair and enhancement capabilities, iZotope is introducing the RX Cookbook, a dynamic online community website of quick "recipes" designed to guide new and seasoned RX users as they fix challenging audio problems. Also: iZotope's new RX Plug-in Pack is an entry-level repair product that comprises four of the most popular plug-in modules that feature within the professional RX5 version.

Jampro Antennas Inc.   C2617
The J3YF is a yagi three-element FM antenna with a directional radiating pattern. It is made of hot-dip galvanized steel. It is suitable for medium- and high-power FM stacked arrays. Also: Java is an FM broadband log periodic antenna system that the company says is one of the finest available to the broadcasting industry, especially in high-gain directional applications. Also: The JFWD is a lightweight Band II folded-dipole antenna. Also: Broadband antennas (sidemounts, panels, yagi), combiners, filters, rigid transmission line, towers.

JK Audio   N3531
The RMx4 field mixer is a battery/AC-powered portable audio mixer combines four mic inputs, each with switchable phantom power, with four headphone/IFB outputs suitable for loud environments. Rugged, field tested design, suitable for use with cameras or mobile devices for live event coverage. Also: CellTap 4c wireless phone audio tap connects between a cellphone and a headset. The passive device provides a mic level output of the user's voice and the caller's voice on separate channels enabling capture of both sides of the conversation with an audio recorder. Works with most smartphones that use a four-conductor 3.5 mm headset. Also: AutoHybrid IP2 VoIP codec, RemoteMix series broadcast field mixers, Innkeeper series digital hybrids, Broadcast Host, BluePack, Concierge talk show system, Innkeeper PBX, Daptor Two.

Kintronic Labs Inc.   N5138
FM combiner for four transmitters of up to 1.2 kW each. Excellent VSWR 1:1.07 or better on a 50 ohm load for any FM frequency. Isolation between channels ranges from −35 dB to −84 dB. Also: Tower lighting isolation choke for eight-wire, 16-gauge configuration. This choke is intended for use with an LED lighting system. The unit includes robust mica bypass capacitors on each winding, and is supplied complete with mounting insulators. An optional aluminum weatherproof housing is avail-

storage. ThunderBay 4 RAID solutions are driven by the SoftRAID engine, with advanced RAID modes, disk monitoring, email notifications and fast rebuild capabilities.

Paravel Systems N1033
Hardware and software solutions for the broadcasting industry. Makers of innovative solutions like the open-source Rivendell Radio Automation System.

Pelican Products C2920

ProConsultant Informatique N6324
Cindy4, PCI's ad sales solution, goes well beyond offering traffic, ad placement and revenue optimization features. Fully integrated and designed to handle global ad campaign strategies, Cindy provides relevant features for linear distribution and non-linear platform businesses as well as programmatic and automated selling.

RadioTraffic.com N4737
RadioTraffic adds programmatic buying and order entry integration to its traffic and billing software. Also: Uncompressed Music libraries offer true CD quality WAV files with your music selections, customized for auto-import into your automation with titles, artist, timing, perfect segues along with Excel table of contents.

Radio World C6748
Radio World is the business trade publication that helps you reach the executives who manage and operate U.S. radio stations, networks and new media organizations. These are the people who deploy licensed transmission, online streaming, mobile apps, multicasting, translators, podcasts, RDS, metadata and much more in carrying out their business missions. Radio World helps these readers — engineers, operations managers and top executives of the U.S. radio industry — understand their changing world and thrive in it, so they can employ not only FM and AM transmitters but also the many new digital and consumer electronics-based tools available to them.

RCS N4630
Zetta2GO gives users control of Zetta automation/playout from an Internet browser. From a tablet or smartphone users can view and fire off Hot Keys for a station. Perfect for remote broadcasts. Also: Selector2GO works on all of today's contemporary browsers and across platforms and mobile devices. Selector2GO provides powerful core scheduling and editing, plus essential analysis of your rotations right in the palm of the hand. Also: Aquira2GO, a browser-based application, helps optimize the selling and traffic activities of the staff. Part customer relationship manager, part sales proposal tool, Aquira2GO lets the account executives remotely access data for their clients. Established Products: Zetta, GSelector, Aquira, RCSnews.
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Redding Audio LLC C3951

RFE Broadcast N6438
FM high-power transmitters: 5, 10, 20 or 40 kW hot plug-in, analog & digital; or 300W, 500W, 1, 2, 3, 6 kW analog & digital with −86 dB of S/N hyper-efficient family; turn-key FM radio stations; digital radio links from 230 MHz to 13 GHz with two, four audio channels or MPX; antenna systems with customized pattern for you by our antenna specialists; antenna towers with installations all over the world.

Rohde and Schwarz SL1205
The THR9 high-power FM transmitter family makes terrestrial broadcasting of audio broadcast signals extremely efficient while saving space. Courtesy of its liquid cooling system, a minimal carbon footprint and the allowance multiple transmitters in a single rack, the R&S THR9 is an extremely efficient transmitter.

RTW C2336
Continuous Loudness Control Software technology allows users to constantly adapt the loudness level of audio they are working on, to a given program loudness value, along with a definable loudness range in real-time with minimal obstacles. With CLC technology, RTW clients are able to maintain accordance with EBU-R128 and other global loudness standard specifications. Also: TM3-Primus, TM3-Primus USB Connect Tool, TouchMonitor TM3, TM7, TM9 and TMR7, SurroundControl 31900 and 31960, mastering tools, loudness tools.

Sabre Industries Inc. N4133
We design, manufacture and install towers for a number of broadcast applications. Custom engineered to meet your height specifications, we offer towers in face widths from 18 to 84 inches.

Sennheiser Electronic Corp. N5729

Shively Labs N2015
FM antennas, filters, combiners, coax components and related transmission products. Industry leader for supplying FM transmission equipment for HD Radio implementation, including interleaved antennas, dual antennas, dual feed multi-station systems and special filtering and combining techniques.

Shutterstock Inc. C1330
Stock music.

Sierra Automated Systems & Engineering Corp. N3138

The RIO Bravo IP engine is a fully integrated DSP-based 2 RU engine for audio mixing, processing and control by SAS consoles and software. It features flexible I/O, up to 96 in and out, and can network with automation computers, studios and a variety of gear using Dante AoIP over a standard IP infrastructure. Also: SAS announces it is providing multiband Orban Inside built-in processing in its RIO Bravo and 32KD products. This allows SAS to provide everything from on-air processing, stream processing, down to "fake air" processing.

Society of Motion Picture and Television Engineers L28

Sonifex Ltd. C1439

The AVN-GMCS IEEE1588 PTP Grandmaster Clock with GPS Receiver is a PTPv2 grandmaster clock for use with AoIP applications. IEEE1588-2008 PTPv2 is used to synchronize all the nodes within a network. To achieve this one of the nodes must become the master clock and distribute time packets to the others. Designed to enable sub-microsecond synchronization between all nodes. Also: The DHY-04G hybrid is used on a 3G/GSM cellular-phone network. It accepts a SIM card in a rear-panel slot and by connecting a suitable GSM antenna it can receive and make high-quality HD Voice broadcast calls over the cellular network, converting the 3G or GSM call to the four-wire audio signal. Also: Redbox audio and video interfaces: video distribution amps, 3G/HD/SD-SDI video embedders and de-embedders; HY-03, DHY-03 telephone hybrids, the DHY-04G GSM cellular hybrid; Reference Monitor range of rack-mount-monitors; and SignalLED LED studio signs.

Sound Devices LLC C6040

The SL-6 powering and wireless system allows users to take control of their bag. The SL-6 offers powering and audio interconnection for standard slot-in receivers, and additional control and monitoring when used with up to three SuperSlot-compatible receivers. The SL-6 attaches to the 688's top panel and also offers antenna signal distribution — which declutters a bag. Also: CL-12 linear fader controller makes quick transitions between cart-based and over-the-shoulder workflows a reality. Attaching directly to the 688 via USB cable, it provides both power and control, a three-band parametric equalizer for 12 inputs, shortcut access to SuperSlot data, and MixAssist monitoring.

Switchcraft Inc. C7216

StreamS/Modulation Index N630

Tascam SL4705

Telos Systems N1934

The Z/IP Stream R/2 multichannel streaming encoder is ideal for high-density processing and encoding applications. It combines the simplicity and reliability of a dedicated hardware appliance with up to eight channels of either three-band Omnia processing or full Omnia.9 processing with adaptive stream encoding in a 1RU chassis. Also: VX Broadcast VoIP, Hx1/2, Hx6, iQ6, Z/IP ONE, Zephyr, iPort, Z/IPStream R/1, X/2, 9X/2.

Tieline Technology N5738

Genie Distribution delivers multipoint audio distribution solutions including six channels point-to-point, three bidirectional stereo or six bidirectional mono, multicasting and multi-unicasting. Optional ISDN and POTS modules deliver network flexibility. Included are dual Gigabit LAN ports, dual internal power supplies, IPv4/v6, 24-bit/96 kHz sampling, plus SmartStream Plus dual-streaming free software. Also: Merlin Plus codec can create two bidirectional mono or stereo remotes, each with separate bidirectional IFB channels, or create six independent bidirectional mono connections with IP codecs or smartphones using Tieline's Report-IT. Optional ISDN and POTS modules allow remotes over IP, ISDN and POTS as required. Also: Bridge-IT XTRA is our inexpensive STL and multipoint IP audio codec, featuring a range of algorithms, including aptX Enhanced, Opus and AAC-LD/AAC-ELD as standard. Includes LCD display, PPM metering and dialing keypad, plus dual-internal power supplies and SDHC card backup. Four GPIOs, IPv4/IPv6 and SIP-compatible. Also: Genie STL is for stereo studio-to-transmitter links, studio-to-studio links and other mission-critical connections. Features dual-Gigabit LAN ports, dual-internal power supplies, IPv4/v6, and 24-bit/96 kHz audio sampling. Includes comprehensive remote control and management tools, plus Tieline's SmartStream Plus dual-streaming free software. Opus algorithm included. Also: Report-IT Enterprise turns an iPhone or Android smartphone into the world's smallest bidirectional 15 kHz IP audio codec and 20 kHz recorder. Report live, record, or report live and record simultaneously. Configure via an iOS, Android app, or a PC. Includes Opus; compatible with the TwistedWave audio editor and Netia Radio-Assist.

Transradio SenderSysteme Berlin AG N4035

Manufacturer of solid-state AM, FM, DRM transmission systems and RF amplifiers for industrial and scientific applications. RF systems, transmitters, exciters, power supply equipment, antennas and tuning units – from planning to turn key projects.

TSL Products   N5112

The MPA family of rack-mounted audio monitors offers greater ease of use and excellent sound quality. It is at home for established I/O — such as MADI, SDI, AES3 and analog — while also embracing the industry's move to audio over IP workflows with support for Dante and Ravenna. Also: The new Virtual Panel add on option for the TallyMan broadcast controller ensures that creative teams, talent and camera operators can instruct relevant systems at pertinent times throughout the production. Users can access the powerful functionality provided in every TallyMan system out-of-the-box through an interface that is customizable. Also: TSL Products will showcase its Soundfield DSF Digital Broadcast surround sound microphone range, the flagship TallyMan control system along with the Precision Audio Monitor (PAM) series of multi-channel audio monitoring products.

V-Soft Communications   N730

New version of Probe 4 RF propagation modeling for FM, DTV/TV, communications systems and interference analysis offers "atlas"-type maps and can integrate high-resolution population databases with state-of-the-art polygon mapping. Longley-Rice, Okamura-Hata, Cost-Hata, PTP #1 & #2, line of sight, ITU and standard FCC methodologies available. Also: The latest FMCommander FM allocations program contains FCC coverage and interference mapping with minimum separations and contour-to-contour tables in one package. Users can simulate an upgrade or move a station or translator. FMCommander integrates data sets, such as FCC station, census, terrain, tower and uses polygon base mapping. Also: Updated AM-Pro 2 AM mapping and frequency search program draws standard and grid-based AM coverage and interference maps based on FCC rules. In addition it performs AM groundwave and skywave RSS allocation studies. The program contains an interactive pattern editor. The Microwave Pro 2 microwave analysis program has been updated. Now using NSMA methodology, Microwave Pro 2 is a top-of-the-line, microwave frequency allocations and path analysis program for the broadcast auxiliary services, Part 101, COALS and CARS projects. The new version adds bidirectional channel analysis. The program produces PCN mailing list to complete the studies. Also: XField is for calculation of the locations of second- or third-adjacent LPFM or FM translator interference areas when various antenna models are used and for determining the locations of FM IBOC host interference when separate antennas are used. Perfect for the FCC translator application window.

Vertical Bridge Technology   Wynn/Encore Hospitality Suites

Largest private owner and manager of wireless communication infrastructure in the United States. Owns, operates and manages over 42,000 tower, rooftop, billboard, utility attachment and other site locations in support of all wireless network deployments.

Ward-Beck Systems   C1941

The AMS2-N rack-mount audio monitor is capable of monitoring AES67 and other digital audio networks. Also: The 32ME-N rack-mount 32-channel audio meter offers AES67 monitoring. It can monitor 16 channels onto and 16 channels off of an AES67 capable network. Also: The MLC8-N Multichannel Level Controller has been designed as an "On Ramp" for analog and AES audio to an AES67 network, including tactile level/mute control. Also: The POD8A analog audio distribution amplifier is a 1 x 16 mono DA, a 2 x 8 Stereo DA or an A+B mixing DA. All inputs and outputs include level controls, all in 1/2 rack space; up to 32 outputs in 1 RU. Also: BIG VU — Originally designed for the 2015 NAB Show as an attention grabber, the comically large LED VU action meters have been improved for 2016. Due to popular demand, they are now available for sale.

Wheatstone Corp.   N2530

New audio console design. Also: New audio processing technology. Also: Digital audio consoles and control surfaces, analog audio consoles, networked digital audio systems, audio over IP products, digital audio editing hardware and software, signal processing for on-air and studio applications and software.

WIDEORBIT

WideOrbit   N5129

WO Automation for Radio is a powerful radio automation solution featuring full content creation, playlist management multimarket voice tracking, live log edits, and remote management capabilities. Integrations with WO Traffic, MusicMaster, vCreative vPPO and Counterpoint Software assure your station automation system is fully integrated with every key station workflow. Also: Join the programmatic revolution! WO Programmatic Radio accelerates revenue by helping stations access new demand sources. Advertisers love programmatic buying because it helps them reach targeted audiences at scale. Participating stations always retain 100 percent control of inventory, data, pricing and who they sell to. Also: WO Traffic, WideOrbit's comprehensive traffic and billing platform, makes it simple to manage any number of stations, groups, markets and media types from a centralized database. We've made numerous enhancements to improve your station's workflow, featuring tools for managing spot and digital together from order entry to invoicing and reconciliation. Also: WO Media Sales is WideOrbit's solution for managing every step of a station or group's sales operations, including proposals, avails, planning, order entry, research, analysis and reporting. Stations running WO Traffic can automatically populate orders entered into WO Media Sales into their traffic system. Also: WO Streaming and WO On Demand are WideOrbit's digital audio products that help stations analyze audiences, target them with the right content and message, and reach them on mobile devices. WO Streaming is our platform for managing, distributing and monetizing streaming audio. WO On Demand is a content management and monetization solution for podcasts and other on-demand content. Established Products: WO Traffic, WO Media Sales, WO Analytics, WO Automation for Radio, WO Programmatic Radio and Digital Audio, WO Streaming, WO On Demand

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334-466-2152
Email: dtankersley@wideorbit.com
Website: www2.wideorbit.com/nab-2016-rwdirectory

Wisycom   C2945

The MTP41S is a small, lightweight pocket microphone transmitter for professional wireless microphone applications, including broadcast, film, location sound and live sound reinforcement. The standout feature is the integrated hardware limiter, which acts as a variable attenuator maintaining a distortion less than 0.3 percent, without lost quali-

THIS OUGHTA HOLD IT

For the tech who has everything: The GaffTech GaffGun, "the tool that is changing the way the world tapes." As seen last year.

ty. Also: MAT288 programmable RF combiner, MFL Fiberbox BX1-4U, MCR42 UHF miniature camera receiver, MTP40 wideband bodypack transmitter, MPR30-ENG wideband receiver, LNNA UHF wideband antenna.

Wohler Technologies Inc.   N6809

Part of the new iAM range of rack-mount audio monitors from Wohler, the iAM-Mix-MADI provides intuitive monitoring and mixing of MADI audio sources with an easy-to-use eight- or 16-button control surface. Also: The iAM-Mix, also part of the new iAM range from Wohler, provides intuitive monitoring and mixing of audio from analog, digital or embedded sources with an easy-to-use eight- or 16-button control surface. Also included is Wohler's new browser-based user interface for remote control and monitoring of all network connected units. Also: iAM-Audio combines 30 years of experience in high-quality audio monitoring with a platform designed to be both adaptable and futureproof. It combines touchscreen panels, intuitive user interfaces and advanced browser-based control and monitoring.

WorldCast Systems   N6134

Based around a digital FM modulator, the new Ecreso FM 10 kW transmitter offers hot-swappable power amplifiers, highly-redundant, parallel power supplies, a passive six-way coupler and customized air-flow cooling. It is designed for easy maintenance and with up to 10 years' warranty, it features all the advantages of the Ecreso compact range. Also: The Audemat Control is a new, IP-enabled remote control unit offering a multitude of inputs and outputs. It is packaged in a rugged 1U, 19-inch rackmount enclosure, and equipped with an extractible voice modem and a removable SSD for easy maintenance. In addition, it features Audemat's ScriptEasy graphic software for comprehensive and easy facility management. Also: WorldCast Manager simplifies network management, providing real-time status of multiple devices on a single screen. The simple PC application, supplied free for six months, allows users to locate and monitor all SNMP-enabled devices from any manufacturer, alerts users to alarms and provides one-click access to their control interface. Also: With new support for analog MPX over IP, the APT AoIP Multichannel IP codec can now support a hybrid MPX broadcast chain where digital MPX is possible on one site and analog MPX on the other. This is ideal for a full digital studio which retains a legacy analog transmitter. Also: APT audio codecs, Ecreso FM transmitters from 100 W to 10 kW, Audemat RDS encoders, HQSound audio processor, signal monitoring, FM measurement and remote site control.

Wowza Media Systems   SU5324

Wowza Streaming Cloud updates provide the latest for end-to-end live streaming service with managed infrastructure, a player, autoscaling to any size audience, quick setup, pay-as-you-go pricing, and an API . Also: Wowza Streaming Engine updates for media server software with the ability to deploy on premises or in the cloud, complete server-level control, cost-effective monthly pricing and APIs.

Yamaha Professional Audio   C1445

How Can Radio Find the Positive?

Radio has so much content to mine
but so few miners busy at work

PROMO
POWER

Mark Lapidus

For decades, music radio was known for creating on-air events so big that TV stations would send over reporters to talk to the DJs about what was going on and reflect on the subject matter.

A sad event this month should have triggered on-air storytelling, listener interaction and buzz, but after many attempts to locate a station capable of producing the goods, I gave up.

The day legendary Beatles producer George Martin died, I turned to classic rock radio to hear remembrances, music

Beatles song.

I couldn't believe it. The man who pioneered multi-track recording as an art form — and in doing so gave radio a much richer sound — was gone. And wherever I checked to try to find a connection, something a fan could relate to, I got nothin'.

Thinking that maybe the next day I might locate someone telling stories about George Martin, The Beatles and the many other acts

"Joy Week" on the Bobby Bones Show brings positivity, unique live performances from stars and fan interaction.

was "Bobby Bones" and his friends, syndicated by iHeartMedia's Premiere Networks.

They — and most likely an astute program director or producer — had created just the type of on-air event I was seeking. It had nothing to do with Sir George, but it had everything to do with creating a show that's special because of its story-telling, unique music, live callers and break from the ordinary.

Within 10 minutes, I knew that "Joy Week" had been created for me because the usual positivity in my life was missing. Bobby convinced me that we should all be thankful for the friends and family we have — and sealed the deal by having a bunch of country's biggest stars play live songs, mainly favorite cover versions rarely heard until that very moment. He took calls from fans who talked about positive things in their lives and even had a few of these listeners ask the stars questions. He told his own positive stories of why he and his cast were joyful.

In short, Bobby Bones and his team produced a real live radio show — for five days in a row — that made me use the same part of my brain that was tickled for so many years by the production skills of George Martin. And that's positivity, through and through.

The author is president of Lapidus Media. Contact him at marklapidus@verizon.net.

I curated my own George Martin-produced playlist on my iPhone, found old interviews and remembered that special man and the way he changed the music world.

and comments from fans. I wanted to connect with others who must be feeling the loss that I was experiencing. I wanted to hear the songs. I wanted to remember the times.

I tried my local stations and heard the usual jukeboxes. Over the next hours, I streamed stations online without hearing a word about Sir George.

In desperation, I tuned to NPR, where I finally got a 2-minute news story with one sloppily cut-in piece of a

George worked with, I tuned in again, only to hear more of the same day-to-day programming.

So much content to mine, but no miners busy at work.

DO-IT-MYSELF

On-air events may not be extinct but they are no longer a regular affair. Maybe too few stations have the talent who are capable of telling stories and opening up their airwaves to listeners to

emote about the topic at hand.

The station that used to be the town square where people would actively gather is now asleep on the dial, a music machine with quick one-liners and nothing special.

I actually got depressed about this state of affairs for a day. So I curated my own George Martin-produced playlist on my iPhone, found old interviews and remembered that special man and the way he changed the music world.

The next day, still feeling down about radio, I stuck to my morning routine of spinning through the dial, first on my car radio and then on my connected iPhone.

Fortunately, I landed on "Joy Week," and after just a few minutes, I had a smile on my face.

A few talents in our business really know how to take advantage of the magic of radio. The talent in this case
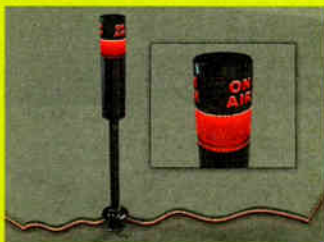
A-T BP40 — Big New On-Air Sound

Audio-Technica has stepped into the
established broadcast microphone market

▶ PRODUCT EVALUATION

BY MICHAEL T. SYNNOTT

I never imagined I could fall in love with a microphone.

In the 50 years since I scored my first gig in commercial radio, I've shared a myriad of studios, stages, booths and desktops with many great mics, but nothing quite like Audio-Technica's recent release from Japan: the BP40 large-diaphragm broadcast mic.

This big-barrel front-address dynamic is beautifully built for broadcast, with a deep multistage windscreen, sleek and black and matte, and so down-to-business, with a pure, uncolored, condenser-like sound.

RICH

It was my true "Wow!" moment at the NAB Show in Las Vegas — those first words, so rich and round, as I worked A-T's demo unit, top of the main hall, early on opening day.

I remember thinking "Who is this guy?" as the headset purred, full-bodied, just like a great red wine.

To their credit, A-T had done a meticulous job setting up their BP40 showcase stand, running it flat through an Allen & Heath mixer; the levels were perfect, all I had to do was press the button and talk. No smoke and mirrors here.

By the time I got hold of an early-

Audio-Technica
BP40 With Optional
Shockmount ($99)

release unit, with the buzz and excitement of the floor already almost four months old, I sat and looked at the open box for way too long, a little trepidation in the air.

I've always gone with my gut: There's only one chance to make a first impression; but could it still be that good?

I run a minimalist plant, a postage stamp-size space, right in the heart of midtown San Francisco. As yet another ambulance wailed by below, I plugged the XLR cable into my trusty ART Tube MP mic preamp — and I've never looked back.

In that moment, the BP40 became my go-to mic of choice. And as I slipped my adman hat on, the headline was a no-brainer: Be bold. Sound as great as you are.

I set it up immediately, right beside me on the desktop, only a head-turn away; to pump out a vanilla demo, experiment with a crazy accent, or "sell sand to Arabs" with corporate aplomb.

Above a sea of hidden cables and components alongside my main monitor, the BP40 performs cleanly, with not a hint of interference.

A-T calls it the "humbucking coil," a phrase that always elicits a grin from a client, but more importantly it delivers consistently clear, rich and natural sound on every job I throw at it.

Measuring in at just over 6-1/2 inches long, an internal windscreen dissipates plosives, even for all of us close talk-

To my mind, the BP40 is an important new contender in this prestigious market.

ers. With a broad deep-set wrap-around diaphragm, well over 2 inches across, it provides ample front end for well-focused delivery. No surprises with things that go pop in the night.

Under the hood, the capsule is placed deep within the rugged, ribbed barrel, for commanding vocal presence and consistent response, even at a distance.

But leaving the best til last, it's the hypercardioid polar pattern, with exceptional off-axis rejection that makes the BP40 a winner in my book.

I noticed it immediately during my daily trial demos back at the big Vegas show, my 22nd consecutive NAB, almost a firewall of focus, isolating my voice from the surrounding clutter and babble; I christened it the "cone of silence" as I easily found its sweet spot.

This feature alone creates a phantom vocal booth wherever I am, in whatever nook or cranny, and truly makes the A-T BP40 dynamic "acoustically agnos-

tic." Big, bold full-frontal sound almost anywhere. Rich and round, without any syrup.

I like to use a 6-inch dual-mesh pop filter; it defines a distance in the work zone and helps maintain the sweet spot. This is a one-on-one microphone; getting comfortable together is the first move.

While the BP40 won't make an up-talker any less annoying or a flat boring drone any more exciting, or improve an over-written script, it will give honest, rich neutral sound, straight out of the box.

And there's nothing lightweight here. Weighing in at 22 ounces, the all-metal BP40 feels as solid and dependable as you are, built to take the punches and last a lifetime.

Although I prefer the low form-factor of the supplied mounting clamp that melds seamlessly with the robust body, the proprietary, optional shockmount is lightweight and rugged in fully-integrated, matched, non-marking hard plastic.

Installation is damage-free and simplicity itself, with a single snap-to-secure. The combo unit will enhance the professional look of any studio. It really does complement an already great-looking mic and, of course, is essential for live, one-take production.

But in the end it's all about the sound, and in the new world of international story-telling, in a sea of talks and blogs and podcasts, ESL, fractured idiom and accent, squeezing the old traditions of broadcast announcing, the Audio-Technica BP40 is truly dynamic.

Purity with a punch. Standing out above the proliferating prattle of the new soundscape. And for the many Barry White sound-alikes dotting the mishmash of media voices, the 100 Hz roll-off will tame a heavy bass line that can so easily overwhelm any presentation.

The multistage windscreen and the deep capsule placement set the BP40 apart.

CROONING

Now, in the interest of full disclosure, I'm a willful Audio-Technica junkie, around 25 years in the making. After a diplomatic career with the United Nations in the 1980s, I left New York City for San Diego just as the nonlinear video editing industry was emerging.

The hot mic around the traps was the Audio-Technica ATM25, for that "late-night FM sound," and it was this now twice-discontinued A-T Japan kick-drum mic that helped me reinvent my radio voice and pioneer affordable corporate video sales tools in the early '90s.

Two of these compact hypercardioid ATM25 dynamics, heavy, rugged and indestructible, have served my voice needs unfailingly, for more than two decades; and if ever there was an evolutionary path to the BP40, put them side-by-side and they certainly do pair up like peas in a pod.

But it's the multistage windscreen and the deep capsule placement that set the BP40 apart, way apart, at the head of the pack to my ears; natural depth, rich and rounded, in the 300 to 3000 Hz range that the human brain finds so attractive. It's where crooners pitch their love songs.

EMPLOYMENT

OPINION

Free Ride Should Be Over for Dual Expanded-Band AMs

▌COMMENTARY

BY LARRY LANGFORD

The author is owner of WGTO(AM) and W266BS in Cassopolis, Mich. His commentaries are a regular feature at radioworld.com. *Here he comments on the recent story "Expanded-Band Owner Objects to AM Surrender Plan."*

I have been dealing with the FCC for more than a quarter century, and one thing my late FCC attorney Lauren Colby taught me well: Be straight with the FCC, lack of candor will sink you every time.

Well, we as broadcasters must expect the same from the FCC. When they say something, we should believe it to be truthful and we expect them to stay true and enforce their orders.

The FCC was as clear as spring water on the expanded-band issue.

Only those stations that *they* scored as the worst interferers could apply to move into the new band. Following that, the FCC would entertain other plans to populate the band.

Well, the "other" plans never came to light and some of the original permit holders have made out like bandits for two decades. The FCC lists 25 that still hold both their old and new licenses.

The FCC order of 1997 was very clear: If granted a permit, owners could under NO circumstances oper-ate both the new and the old station for more than five years. No ifs ands or buts. It was *plain and clear*!

Some of the owners followed the rules and chose the new station or the old station after five years, and turned in one license. Now I bet they feel like suckers.

The FCC order of 1997

was very clear: If granted a permit, owners could under NO circumstances operate both the new and the old station for more than five years.

Some owners who have held on to both stations have used creative arguments. Keeping both stations was in the public interest as some companies tried to justify selling the old or new station to a minority group. Some of the arguments are very persuasive but do not con-form to the original 1997 order, and the FCC did not buy those arguments in most cases.

Some of the nation's larger broadcast companies have been involved in some of these attempts to wheel and deal on the expanded band, and yes, some new and welcomed service has been provided to targeted audi-ences as a result. But the same thing could have been done by opening the expanded band to new applicants along with moving so-called high-interfering stations.

The FCC messed this up from the beginning. Why did they allow the expanded-band station to be run as a separate program entity? They could have put real teeth in the order by forcing both stations to simulcast their programming for the full five years. By forcing simulcast like they do with translators, the FCC would have prevented the operators from, in effect, running two different stations and setting up a situation where it would always be economically difficult to give one up. The FCC should also have made cancellation of the standard-band station automatic after five years unless the owner petitioned to cancel the expanded-band sta-tion instead.

So while lawyers will make money writing argu-ments to allow owners to keep both stations on air or sell one, the truth of the matter is simple, the FCC lacked candor in dealing with the band and those who could or would move into it.

The only way the FCC can deal with this now is to turn the clock back and set a short deadline using the original language. Surrender one or the other.

It's a tough move but the owners were warned and the free ride should be over. Once that is done the FCC can, as originally promised, look to fair and equitable ways of adding a limited number of new stations based on an application window.

Comment on this or any story. Email radioworld@nbmedia.com.

▌READER'SFORUM

SEEKING MISSOURI RADIO ARCHIVES

The recent meeting of the Radio Preservation Task Force was inspiring to people like me who've been working for years to pre-serve air checks and memorabilia.

After putting together a rather extensive collection of St. Louis radio tapes, I'm branching out to gather material from outstate Missouri stations so we can preserve what was done in smaller markets and places like Springfield, Jop-lin, etc.

With the help of the Missouri Broad-casters' Association we are beating the bushes to find old recordings. Most sta-tions, as you might assume, have long ago discarded them, but individuals (engineers, too) have kept them.

I'm hoping Radio World will help me get the word out. We will take anything from Missouri and I'll make sure the airchecks are routed to the proper radio archive for digitizing and preservation. Emails are welcome at *history@swbell.net*. Also feel free to visit my media history website at *www.stlmediahistory.com*.

Frank Absher
Executive Director
St. Louis Media History Foundation
St. Louis, Mo.

SCHENECTADY SHORTWAVE

I always look forward to John Schneider's radio history articles both in print and on the Web. One of my favorite classes when I was teaching radio media at the tech college in Lakewood, Wash., was broadcast history.

This particular article ("Schenectady Shortwave Transmitters, 1941," March 2) struck close to home. From 1955 to 1964 (second through 10th grade) I lived in Niskayuna, N.Y. near the WGY/WGFM/WRGB building on Balltown Road that opened in 1957.

Most of the families on my block had adults about the age of my parents but there was one older couple directly across the street. I didn't see much of them except for scout and school paper drives, fundraising sales and Halloween. I knew the man as Mr. Wheeler. (I recall his first name being George but that was not what we kids used.) My parents described him as an engineer (in charge of, head of, supervisor etc.) for the GE/VOA transmitters at the site shared with WGY.

I got a Novice ham radio license in 1960 and a General license in 1962. That led to a few casual conversations with Mr. Wheeler. And when "his" transmitters where shut down in 1963 and dis-mantled, Mr. Wheeler presented me with a small box of "stuff" from the site — none of which I could actually use at the time but all interesting. Big ceramic wire-wound resistors, big blocky mica capacitors, some switches, a boxed glass Eimac power tube about the size of a grapefruit with a number that I never saw in any ham publication. None of that stuff looked like it had ever been used. But there was also one air wound wire coil — about 5 inches long and 2 inches in diameter — which had been carefully unsoldered at both ends. With a paper tag tied on with string identifying the transmitter from which it came.

When the dismantling was done, Mr. Wheeler retired. I still have all the stuff from that box — though it's been packed for decades and moved across the country several times since then.

After the Navy, from 1974 through 1976, I worked for GE Broadcasting on Balltown Road (and then from '77–78 at KOA in Denver). The Schenectady old-timers sometimes mentioned the short-wave remains: concrete anchors and some very large insulators left on the ground on the property near the WGY tower.

So I enjoyed this Radio World article on an even more personal level than most.

John Mangan
Tacoma, Wash.

ADVERTISER INDEX

This listing is provided for the convenience of our readers.
Radio World assumes no liability for inaccuracy.

▶ READER'S FORUM

MUSIC RATES, OUCH!

Good story that Mr. Stine did on this issue ("Small Webcasters Are Squeezed by Music Rates," March 2).

We too have been squeezed by the rate hikes dictated by the CRB. We went on the air towards the end of October last year, and have seen rates steadily increase, and it has been painful, because we're not even close to billing enough to cover our operating costs. We signed on at a time when advertising budgets were spent and then of course, there were first-quarter doldrums to work through. We're hoping that we can see some relief in April.

We are clients of Marvin Glass' Streamlicensing.com. He has done his best to prepare us all for the increases, but I don't think any of us were prepared for the hikes that we received. A lack of formal organization has not helped our case.

When we first signed on, we did so with a music-intensive adult contemporary format during the day, with smooth jazz at night, and oldies and classic rock on the weekends. Lately, we've been positioning ourselves for moving to a non-music format, such as the addition of two agriculture-based talk programs, and news that benefits the agriculture community.

I wish the CRB would understand the counterproductivity of these rate increases. Keep costs affordable so these stations can operate … or raise them to the point where stations are forced to go silent. Then you have nothing. After all, isn't a little something better than a big fat nothing?

Just for what it's worth.

Ken Hawk
President/General Manager
WSNQ(AM)
Saxonburgradio.com
Saxonburg, Pa.

OTA OUTLOOK

Without question Bob Culver is dead-on accurate ("Why It Doesn't Look Good for OTA," March 2). Much of broadcast is on a death watch; it is just a matter of time.

The spectrum is far more valuable than selling commercials. There is plenty of blame to go around, but it can simply be summed up with Bob's comment that radio, specifically, has not provided any reason to listen. Sadly, that comes after trying so many Band-Aids that all missed the actual problem. It began in the mid-'90s as radio lost its vision.

Richard L. Edwards
President
CityScape Consultants Inc.
Boca Raton, Fla.

HOW TO

SEND A LETTER TO THE EDITOR:
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